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Address

DIAGNOSIS IN ITS RELATION TO THE LABORATORY AND THE BEDSIDE*

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DENVER

In describing a visit to this country, Dr. Rolleston[1] expresses himself interestingly as to medical teaching and hospitals here. He says that more systematic work is done in the clinical laboratories, but that there is a serious lack of routine ward work in the hospitals. The danger is suggested that the thoroughness in the clinical laboratory examinations may lead to less thoroughness in the routine physical examination of patients. (Specialism is more extreme, he states, than abroad.) I believe that this criticism is fair and just. The not infrequent diagnostic errors of internists and surgeons, even those who have had good educational and clinical advantages, show a lack of thoroughness in examinations and of close observation of clinical phenomena, or at least failure to deduce rational conclusions.

The schools, and the bearing of many leading men in special work, in emphasizing, to an inordinate degree, the importance of pathology and technic, in comparison with other features of the work, are partly responsible for the absence of painstaking observation and scientific analysis of symptoms at the bedside.

Detailed critical study of the history of cases and the meaning of clinical signs, subjective and objective, is, I fear, not the common practice—even of surgeons.

There is too much reliance, even when not necessarily exclusive, on instruments of scientific precision and on laboratory diagnoses, and too little on the training and discipline of one's own faculties in one's accustomed work. The result is a few expert diagnosticians in certain departments, and a general decadence in diagnostic skill and acumen.

In proportion to the better facilities for teaching and improved educational advantages generally, we should expect equal progress in the ability to observe and understand the causes and the conditions of disease, and we ought to have more, and not fewer, diagnosticians. Even in large communities, it seems to be accepted as a satisfactory condition if there are one or two men only who deserve this distinction.

It requires closer study, more time to analyze and elucidate—in order to interpret symptoms and conditions more rationally—than most men seem willing to give to the subject. It seems strange that competent men should commit errors in diagnosis that could be avoided if well-known resources were employed in the solution of problems common to our experience. The surgeon has deified aseptic and operative technic—the former the common knowledge of the profession, the latter the individual, and, in considerable degree, varying attribute of each operator. Excellent in these respects, and often in pathologic lore, the surgeon trusts the rest to the laboratory, seeming to overlook or underestimate the fact that the thorough, competent surgeon is not only a skilful operator and an intelligent pathologist, but an observer and respecter of many other important and necessary facts in the equipment of an equally skilful diagnostician.

Sound judgment in the many phases of our work is the growth of natural fitness, education, close observation and the knowledge of laws and facts governing specific and general diseases. A great surgeon is not a mere mechanic; he is a good physician and a trained clinician as well. It must be admitted that errors of diagnosis are often due to careless and indifferent examinations, to insufficient time and want of due consideration of all the evidence that might be obtained, and too much reliance on the probability or certainty of the laboratory expert, if one is convenient and available.

An exploratory operation is often a short, and sometimes unnecessary, cut to the solution of the difficulty. Being generally a safe procedure, under favored conditions, it is a ready and quick resort whether an emergency exists or not.

May I cite a few recent suggestive cases of diagnostic interest? A man of 67, of previous excellent health, except a brief but significant history of evidence of gallstones ten years before, had suffered for eight or ten months from slight indigestion and intermittent diarrhea. He was examined by two first-class physicians and three or four surgeons of equal distinction. A tumor of the epigastrium of considerable dimensions was noted, and a globular swelling, the size of a cocoanut, to the right of the umbilicus, and below the edge of the liver, was also recognized. The patient never vomited, though eating solid food, and at no time was there evidence of pyloric stenosis. A test meal was given and absence of hydrochloric acid was shown. The diagnosis was cancer of the pylorus. With such a history, should it have been necessary for a postmortem six months later to determine the presence of cancer of the gall bladder with gallstones, secondary involvement of the liver, and no disease of the stomach?

Again, a woman of 65 had uterine hemorrhage, an acrid, offensive discharge, and other clinical evidences of cancer. A surgeon advised hysterectomy. A consultation was held, curettage was performed and the scrapings sent to a distant pathologist to determine the existence or non-existence of cancer. Was this, for obvious reasons, a wise surgical procedure?

* Presidential address read before the Western Surgical and Gynecological Association, Minneapolis, Dec. 29, 1908.

1. Brit. Med. Jour., Dec. 28, 1907.

A young woman of 20 fell from the steps of a street car in motion, striking on her abdomen; was laid up for several weeks, and a swelling to the left of the umbilicus gradually developed. It was explored and a large quantity of pus evacuated. A fistula remained, from which there was discharge, including urine, for a year. Physicians and surgeons were in doubt as to the source of the trouble. Should an *x*-ray examination, revealing renal calculi, have been necessary to determine the source and nature of the abscess (pyonephrosis)?

Would an experienced surgeon wait for the demonstration of 20,000 white corpuscles to the cubic millimeter before recognizing a case of postoperative ileus? Would he rest on the opsonic index to determine, as a rule, his course of action in operative work?

A woman of 38, married, never pregnant, was examined, three or four years ago, by a surgeon of good character. The symptoms were persistent pain in back over left ileum posteriorly; the diagnosis, tuberculosis of the left hip joint. The patient was treated with extension in bed for six months with marked aggravation of pain and nervousness. The pain extended to the thigh, knee and ankle. Extension was discontinued and the patient went on crutches for a year. A critical examination of the patient at a more recent date by a surgeon and neurologist reveals absolutely no indication or evidence of tuberculosis, past or present, of any part or organ and no family history of same. The joint is perfect. Hemoglobin, 75 per cent. There is a distinct neurotic personal and family history. The patient is anemic and hysterical. The surgical treatment was unnecessary and undoubtedly made worse the neurasthenia from which she has been suffering.

Such patients are not infrequently overtreated, even by the surgeon sometimes.

A young woman of 26 had had acute pleurisy in the left side when 8 years old. At 15, pus from empyema ruptured through the bronchial tubes. For the last eight years the patient had suffered from paralysis of the left leg; she was bedridden for two years, and also had disease of the lower dosal vertebra with ulceration through the back. Three years ago she was examined by a surgeon of high character, who pronounced the disability of the leg tuberculous periostitis of the femur. Thoracotomy was performed one year ago. The patient was recently examined by a neurologist and the same surgeon who made the examination three years ago, and a diagnosis was made of motor paralysis of leg due to meningomyelitis from the diseased vertebra with no tuberculosis of the femur.

The syphilographer and the surgeon have not often found it difficult to make a diagnosis of hard chancre; but in the future the demonstration of the *Spirochæta pallida* will, I suppose, be necessary to a sure diagnosis, notwithstanding the declaration of Hoffman, Schaudinn's chief assistant, that only an expert who, by familiarity, has acquired intuitive knowledge of the morphology is competent to differentiate the stained forms from other spirochete bodies. Bloodgood, in a recent review of joint surgery, says: "It seems surprising that for years we have concentrated our attention on the joints, or, as physicians, on some changes in metabolism, and not investigated for the source from which the infections flowed."

These statements and criticisms will apply as justly to the work of the laboratory as to the unscientific clinical work at the bedside. The busy physician and surgeon can not do much of the immense amount of laboratory work now required, even if equipped for it, as few are; but laboratory findings are essential to a high degree of diagnostic efficiency and to the most scientific practice of our art. The knowledge of the internist is necessary to the surgeon. He is far from accomplished without it, and it is of the utmost importance to the patient that the physician should know enough of surgery to differentiate between a medical and a surgical condition. The very exclusive specialism which treats these qualifications lightly seems forgetful of its own needs and the full measure of its obligations.

In those fine differential distinctions, especially in the diagnosis of pancreatitis, cholelithiasis and duodenal and stomach ulcers, there are no laboratory tests by which the diagnosis can be made, nor are there any conclusive clinical tests; but both are helpful and necessary to a just conclusion. The Cammidge test, like the test meal, the Widal and other tests, is merely an aid in the scientific solution of the many problems which confront us in the efforts to discover the cause and nature of disease. The microscope, unless directed by a knowing hand, and balanced by a scientific spirit, could not have given renewed distinction to the Paris school of medicine and to the names of Capitan and Professor Cornil, who made the pathologic examinations, and a diagnosis of interstitial nephritis (which is consistent with the clinical history) in the case of Admiral Paul Jones 113 years after his death.

Far be it from me to underestimate in the slightest degree the absolute necessity and the great value of the laboratory to the progress of medicine. It is the very basis of our greatest achievements, and it is the force which has immortalized, among the many, the names of Pasteur and Koch, and which has honored and glorified the profession wherever the science of medicine is known. But the results obtained by the use of instruments of scientific precision are not always accurate and reliable. So much depends on the motive power and genius behind the instrument that we can be content only with real, and not half-baked, experts, in order that our scientific conclusions may rest on a scientific basis, and our efforts have a practical value. With this knowledge and equipment applied at the bedside, and with that common sense which is fortified by observation and experience, we should be able to secure a satisfactory history, to make a more complete and intelligent examination, and to interpret symptoms and signs with more skill and judgment.

Science is not the exclusive property of the expert, nor the necessary product of the laboratory. Our aim should be, not to produce fewer experts in research work, but more scientific clinical experts and diagnosticians. This I believe necessary to the broader culture and usefulness of the profession, as well as to the best welfare of the sick. Surgery, as a study, is not exclusive, though the practice may be. A narrow view of the subject is not conducive to the best education, nor to the most thorough equipment. Personality is of the greatest moment; but great surgeons are not made by imitation, and skill in diagnosis is a protean product that can never be measured by the rod and the plumb.

Slow Pay.—The press reports of a national tailors' convention state: "The tailors say that a whole lot of people seem to think the only bills they are not duly bound to pay are tailors' bills." Some physicians have stated that doctors' bills were so considered. It may help some to know that there is a difference of opinion.

Original Articles

THE TREATMENT OF ERYSIPELAS BY INOCULATION WITH A SPECIFIC VACCINE*

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In January of this year we undertook the study of erysipelas with the special consideration of the production of an artificial immunity by inoculation with a vaccine prepared from the *Streptococcus erysipelatis* of Fehleisen. "True" erysipelas, as you know, is due to an infection of the lymph spaces of the skin by the micro-organism just referred to, with or without involvement of subjacent cellular tissue; and the majority of investigators believe that the streptococcus of erysipelas is the sole or specific cause of the disease. Moreover, many believe that it is identical with the streptococcus causing puerperal septicemia, pyemia, etc. The work of Dean and Petruschky would seem to confirm this view.

From the standpoint of immune therapy it is a matter of some importance to discover whether the disease is one in which the bacteria are localized to the affected part or whether they commonly escape into the blood stream and produce a bacteriemia.

Experiments on animals and also blood cultures taken in severe cases would seem to establish the rarity with which it becomes a general infection. Furthermore, Manfredi and Traversa have succeeded in producing the severe constitutional symptoms of erysipelas in animals by inoculation of the toxins of the specific streptococcus. It would thus seem probable that the general symptoms of malaise, pyrexia, acceleration of the heart-beat, and mental apathy or irritability are all due to the absorption of the specific toxin of the streptococcus, while, on the other hand, the local signs and symptoms are consequent on the local multiplication of the micro-organisms in the lymph spaces of the skin and the local production of toxins; moreover, that a remedial measure which is capable of inhibiting the reproduction of the streptococcus would be likely to control the clinical manifestations of the disease quickly.

Our investigations of the opsonic content of the blood of 16 patients before inoculation was undertaken revealed the interesting and important fact that in 14 of these the streptococco-opsonic index ranged from 0.65 to 0.9; in the remaining 2 cases it was in one 1.1 and in the other 1.3. It is worthy of note that these last 2 patients were proceeding to recovery, presumably owing to the natural production of specific antibacterial substances as the result of autoinoculation, by which term is meant the escape of bacteria or their products into the adjacent lymph or blood streams and the consequent stimulation of the machinery of immunization to the production of antibacterial substances.

Perhaps this consideration will be more intelligible if we mention certain well-known phenomena of such localized infections as boils. In these the opsonic index to the specific micro-organism — that is, the *Staphylococcus pyogenes aureus* — is less than normal — for example, 0.7, 0.8, etc.—normal being taken as 1. The chronicity of furunculosis and the low opsonic indices observed have been shown to be due to the absence of autoinoculation. Similarly in the case of certain localized infections due to the tubercle bacillus the opsonic index is less than 0.8. Tuberculosis of lymphatic glands, the bladder, etc., are characteristic instances of this. It is unnecessary for us to multiply examples of localized infections due to other micro-organisms; suffice it to say that continuance of these infections is associated with a lowered opsonic power while progress to cure is associated with a rise of the opsonic power above normal.

The sixteen cases referred to were studied with respect to their opsonic power to the *Streptococcus erysipelatis*, not only before active treatment by the streptococcus vaccine was undertaken, but also afterward. In the 2 patients proceeding to recovery a high opsonic power was observed before inoculation, so these must be omitted. In 13 cases a subsidence of the signs and symptoms of the erysipelas was definitely associated with a rise in the opsonic power. The remaining patient died; and it is of interest to note this patient particularly, since her case is the only fatal one of our series of 50 cases. The patient was a very fat woman, 61 years

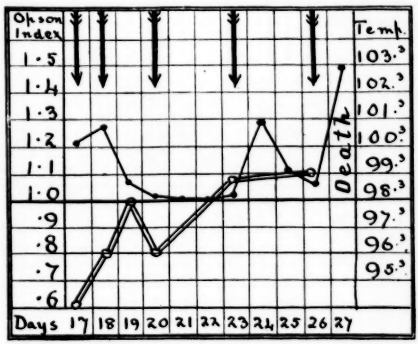


Chart 1.—Almost continued pyrexia with feeble response of opsonic immunity to inoculation with from 10 to 20 million devitalized streptococci. Double line is opsonic tracing; single line, temperature tracing; arrows represent inoculation. This chart represents the only fatal case in a series of 50.

old, comatose on admission to the hospital. Her leucocytes were not increased in number and her opsonic index to the streptococcus was 0.6. Just as she responded feebly to such general stimulants as alcohol and strychnin, so also was her response weak to the specific stimulation of our vaccine. It was with difficulty that we increased the opsonic power of her blood to 1.1 by inoculation. She died shortly after admission from the progress of her disease without regaining consciousness. This patient's case is graphically shown in Chart 1.

STUDY OF PATIENTS TREATED BY INOCULATION

Charts 2 and 3 represent fairly well the opsonic and temperature curves of 13 out of the 16 patients whose blood was fully and frequently investigated. It will be observed that in both the opsonic power was low before treatment and that it rose subsequent to one or two inoculations of the streptococcus vaccine; furthermore, that the fall of the temperature was shortly subsequent to the rise of the opsonic power. We may add that the rise of the opsonic power coincided more par-

* From the Department for Therapeutic Inoculation, the Toronto General Hospital; an address given before the Medical Society of the County of New York, Oct. 26, 1908.

ticularly with marked diminution of toxemia and definite evidence of localization of the inflammatory area.

These observations on the course of immunity in erysipelas before and after inoculation with the vaccine appear to us important; but, after all, the final judgment on the value of an alleged specific remedy must rest on the comparison of the clinical results obtained by its use with those due to the administration of other alleged remedies. Erysipelas is so varied in its clinical manifestations that there are serious difficulties to an absolute comparison, but such a comparison is not impossible and we shall proceed with it.

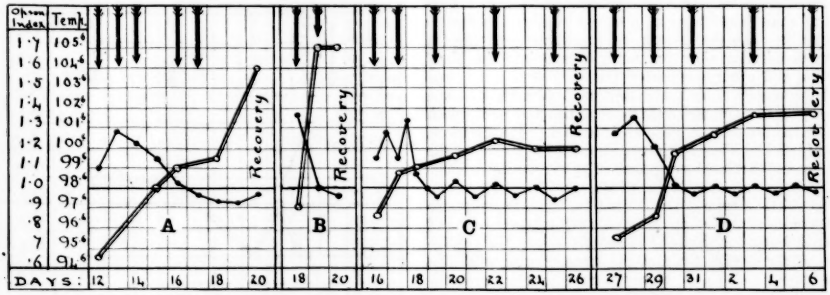
The first stage of the comparison is somewhat illogical, for we shall refer to our clinical observations of the course of the disease in our whole series of 50 cases and only then make certain detailed comparisons of a series of 19 cases treated without vaccination and a similar number treated by our specific vaccine.

Of the 50 cases 18 were very severe, 20 were severe, and 12 were mild cases. The chief criteria of severity were pronounced pyrexia (103 F. or more), tachycardia, mental dulness or delirium, and a considerable inflammatory area, with signs of rapid spread.

for the year 1907. Of these 19 are recorded, most of which were treated by some such external application as ichthyol or lead lotion or internally by ferric perchlorid. I realize the objection to accepting this series as parallel to our own, but probably the comparison is not an unfair one, as perhaps those who have had years of experience of hospital erysipelas will be able to testify. I think it will be agreed that the cases of one year closely resemble in average severity those of another. The salient features of this comparison are set forth in the accompanying table:

TABLE SHOWING THE RESULTS OF TREATMENT OF A SERIES OF 19 CASES OF ERYSIPELAS BY INTERNAL AND EXTERNAL MEDICATION AS COMPARED WITH A SERIES OF 19 CASES TREATED SOLELY BY INOCULATION WITH A SPECIFIC VACCINE

Method of treatment.	Pyrexia completed in 24 hrs.	Pyrexia completed in 48 hrs.	Pyrexia completed after 48 hrs.	Average duration of pyrexia.	Complications.	Average duration of illness.	Average stay in hospital.
Non-specific.							
Series 1907, 19 cases..	3	3	13	8.9	6	25.0	18.0
Specific Vaccine.							
Series 1908, 19 cases..	7	7	5	3.1	1	12.8	11.2



Charts 2-5.—Rise of opsonic immunity and fall of temperature in four patients, A, B, C and D. Double line is opsonic tracing; single line, temperature tracing; arrows represent inoculation with from 10 to 20 million devitalized streptococci.

Time will not permit us to detail cases, so we are forced to sum up our observations in a general way. Perhaps the most striking change in our patients was a rapid subsidence of such symptoms of toxemia as mental unrest or even delirium and of that profound malaise so usual in this disease. Even the patients in acutely severe cases almost invariably felt quite different—we might almost say infinitely better—in twenty-four to thirty-six hours after the first inoculation with our vaccine. Locally some spread of the process usually occurred until after the second inoculation, which was administered on the second day, and occasionally until after the third; but whatever the extension observed, it was remarkable in certain respects.

1. The color was of a brownish-red rather than the angry red of the acute process.
2. The swelling of the skin was less.
3. The tenderness over the area of extension was less acute or absent.
4. The patient complained of little pain in it.
5. The margin of the erythema was rarely raised but faded imperceptibly into the adjoining tissues.

For purposes of comparison of our own results of cases treated solely by inoculation with our streptococcic vaccine, we have had recourse to the records of all the cases in the case-books of the Toronto General Hospital

In the 1907 series the pyrexia lasted in 13 cases from four to thirty days.

In our own series of 19 only 5 lasted after forty-eight hours; that is, 1 for three days, 1 for four days, 1 for six days, 1 for nine days, and 1 patient died.

The cases of the 1907 series manifested the following complications:

Recurrences, 2 on the fourteenth day.
Synovitis, 1.
Conjunctivitis, 1.
Multiple abscess about face, 1.
Pneumonia and cervical abscess, 1.
In all, 6.

In our own series there are no complications to report, except an abscess over the parotid, which was due to a staphylococcus infection, probably the result of an incision previous to admission to the hospital.

We are unable to make any satisfactory comparison as to the rapidity or extent of the spread of the primary area involved in the two series. The data available on this point are insufficient.

We realize fully that a prolonged trial of the vaccine will be necessary before any final judgment can be reached by the medical profession as to its therapeutic value. Nevertheless our own belief is firm from the study of 50 cases that a vaccine prepared from the

Streptococcus erysipelatis, properly administered, exercises a specific and controlling influence on the course of the disease—preventing its spread, lessening its severity and hastening recovery.

The reason for our faith may be briefly summarized under two main heads:

1. From the standpoint of immunity: The opsonic power of the blood is low during the acute process of the disease and whenever more or less rapid spread is manifest; again, the subsidence of such symptoms as malaise, mental unrest or apathy, pain and tenderness and the localization of the inflammatory area are closely associated with an increased immunity as evidenced by a rise of opsonic power. We are inclined to attach great importance to these considerations of immunity because we have so frequently observed parallel series of events in therapeutic inoculations with bacterial vaccines in many cases of boils, septic hands, tuberculosis of the glands, bladder, etc., and in many other cases of localized bacterial infections.

2. From the standpoint of clinical observation of the course of the disease as apparently influenced by inoculation with our vaccine: Whatever surface becomes involved subsequent to inoculation manifests a less severe form of inflammatory process; mental unrest and physical discomfort are rapidly controlled; pyrexia seems to subside more rapidly and long-continued pyrexia has not been encountered; complications and sequelæ seem to be much less common.

We, therefore, submit that the evidence adduced in this communication is sufficient to justify the use of a vaccine prepared from the *Streptococcus erysipelatis* in the treatment of erysipelas, particularly as there is no recognized remedy for this disease.

TREATMENT

In our series of 50, only the first 16 patients were treated according to the opsonic principles of vaccine therapy, but these revealed such a uniformly satisfactory immunizing response and clinical result that we felt justified in attempting the administration of the erysipelas vaccine without the usual blood examinations; and it seems reasonably certain that in the vast majority of cases of erysipelas it will be unnecessary to be guided by estimations of the opsonic content of the blood to determine either the amount of the vaccine indicated or the appropriate time for reinoculation. We are led to this belief because, having once determined a satisfactory method of administration of the vaccine by the close study of the blood in 16 cases we achieved equally successful results in a series of 34 cases of erysipelas, many of which were severe, without having had recourse to the opsonic index in any case. We are, however, appreciative of the fact that in certain severe cases the usual thorough blood investigation may be required.

If we are right, therefore, in our conclusions that erysipelas vaccine when properly administered is a specific remedy for erysipelas, then the importance of being able to omit the laborious opsonic investigations becomes exceedingly great, for it puts into the hand of every practitioner of medicine a new specific for an exceedingly troublesome affection for which as yet only a multitude of remedies of alleged efficacy is available.

It is entirely unnecessary to prepare a vaccine for each case. It is, however, advisable to have a composite stock vaccine derived from several different strains, from as many different cases. It is probable that the more virulent the case of erysipelas the more valuable will its streptococcus be as a vaccine.

Our method of treatment has been, in almost every case, to inoculate with 10,000,000 of the devitalized streptococci on the first visit if the case is a severe one, and with 20,000,000 if it is less severe. On the second day in the severe case the patient gets 10,000,000 more if there be signs of improvement. The most important of these signs is a certain clearing of the intellect, and the others are a lessened intensity of the local condition—less tenderness and pain. The temperature is not so satisfactory a guide, although a fall of 2 or 3 degrees on the morning following the injection is a valuable indication for a second inoculation. If, however, no evidence of improvement obtains in the very severe case and it is impossible to determine the opsonic power of the blood, then 5,000,000 only should be administered on the second day. In less severe cases improvement is almost invariably manifest on the day succeeding inoculation and the patient should receive half the first dose: that is, 10,000,000. We then inoculate with 5,000,000, 10,000,000 or 20,000,000 of streptococci on every second day until a week after the temperature has reached normal and the erythema has subsided. We are guided as to the amount of our dose in each case (when opsonic investigations are impossible or unnecessary) by its severity and the satisfactory results as shown by clinical observation. Our rule is: "The more severe the case and the less satisfactory the clinical response the smaller the dose."

The site of inoculation chosen has always been away from the area involved. Our results have been so successful by this method that we have not felt justified in attempting other measures, such as inoculation near the site of infection.

A MILK-BORNE OUTBREAK OF TYPHOID FEVER TRACED TO A BACILLUS-CARRIER

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The city of Washington and the District of Columbia are one. There is but one government, and there are no "city" boundaries except such as prior to 1871 marked the limits of the then existing corporation of Washington. To the westward of the city, across Rock Creek, there was at that time located a smaller, though older, community known as Georgetown. This, like the city of Washington, has long since ceased to exist as a separate corporation and now forms an integral part of the District of Columbia. Officially it is known as West Washington, but in the ordinary speech of either community it is still commonly referred to as Georgetown. For convenience it will be so designated in this paper. The water supply, the sewerage system, the food supply and the laws and sanitary administration of Georgetown are in no way different from those of the rest of the district. The annual police census of 1907, the latest returns available, gave to Georgetown a population of 17,168 and to the remainder of the District of Columbia 312,423, making the population of the whole district 329,591.

EXTENT AND LOCATION OF OUTBREAK

From October 8 to November 1, inclusive, 1908, there were reported in the entire District of Columbia 135 cases of typhoid fever. Of these, 54 occurred among persons residing in Georgetown. The population of Georgetown, about 5 per cent. of the total population, yielded, therefore, about 45 per cent. of all cases, and during this period typhoid fever was over twelve times as prevalent in Georgetown as it was in the remainder of the district. During the twenty-five days preceding October 8 there were reported in the entire district, exclusive of patients brought in from other jurisdictions, 96 cases, only 4 of which were among the residents of Georgetown; and in the twenty-five days immediately following November 1 there were 54 such cases reported in the district, only 2 of which were in Georgetown. The situation is clearly shown by the following table:

STATEMENT SHOWING THE INCIDENCE OF TYPHOID FEVER IN WEST WASHINGTON, COMMONLY KNOWN AS GEORGETOWN, AS COMPARED WITH THE INCIDENCE IN THE REMAINDER OF THE DISTRICT OF COLUMBIA

Period.	No. of Cases. Georgetown.	No. of Cases. Remainder of D. C.	Case Rate per 10,000. Georgetown.	Case Rate per 10,000. Remainder of D. C.
Prior to outbreak. Sept. 13, to Oct. 7, 1908....	4	92	2.23	2.94
Period of outbreak. Oct. 8 to Nov. 1, 1908.....	54	81	31.45	2.46
Subsequent to outbreak. Nov. 2, to Nov. 26, 1908 ...	2	52	1.16	1.66

Population according to the police census of April 10, 1907: Georgetown, 17,168; Remainder of the District, 312,423.

MILK SUPPLY IN RELATION TO OUTBREAK

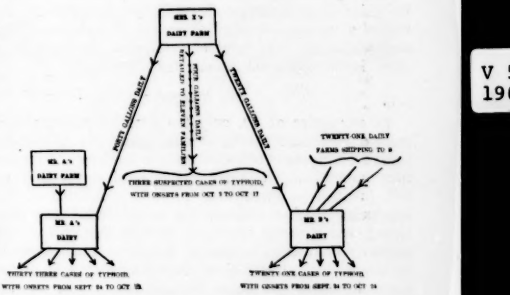
A joint investigation of the reported cases by officers of the Public Health and Marine-Hospital Service and of the Health Department of the District of Columbia showed that of the 54 cases occurring in Georgetown during the outbreak 30 were among persons who during the thirty days prior to onset of illness had consumed milk supplied by dairyman A, and 18 among persons who had consumed milk supplied by dairyman B. Of the remaining 6 patients, 2 used milk supplied by dairyman C, 1 used milk rarely and from various sources, 2 used no milk in any way, and 1 used milk supplied by dairyman D and subsequently boiled. No direct connection has ever been found between these 6 cases and the milk sold by either dairyman A or dairyman B. The last-mentioned case occurred, however, in the same household as 2 of the cases which had used milk from dairyman B and during the two weeks prior to the onset of his illness this patient was in association with the other patients. His infection probably was due to contact.

The milk supply of Georgetown is obtained from certainly more than thirty different dairymen. Dairyman C probably supplies more customers than any other dairyman in Georgetown. He serves 292 households, as against 263 supplied by A and 231 supplied by B, and his delivery route ramifies through the same sections of the city as theirs. Among retail customers A distributes daily about 261 quarts of milk, B about 200 quarts, and C about 525 quarts. As there were during the period of the outbreak but 2 cases reported from households supplied by C, and only 2 cases from households supplied with milk from all sources other than those of A, B and C, it is evident that a disproportionately large number of cases of typhoid fever was occurring among the customers of dairymen A and B in Georgetown. Moreover, during this period there were reported among persons living in sections of the city outside of Georgetown 3 cases among the customers of A and 2 among the customers of B. (Another case, the onset of which was October 15, was reported among the customers of B on November 16.) The records of the health department showed no cases in households supplied by dairyman A during the entire twelve months preceding this outbreak, and only 7 among the households supplied by dairyman B.

The period of definite onset of illness of the 33 patients supplied with milk by A extended from September 24 to October 22 and of the 21 patients supplied with milk by dairyman B extended from September 24 to October 24. Two cases secondary to those patients supplied with milk by B had their definite onset on October 22. Early in the investigation it became evident that the spread of the infection had occurred along the routes of the two dealers at about the same time, and a common source of infection for the outputs of these two dairies was suspected.

SOURCES OF SUSPECTED MILK

A's supply of milk was received from two dairy farms, one of which, in the District of Columbia, is owned by him and is the location of his dairy. The other was the farm of Mrs. X in Maryland, from which he received about 40 gallons of milk daily. B's supply came from about twenty-two dairy farms located in various parts of Virginia and Maryland. One of these was the farm of Mrs. X, which also furnished a part of A's supply, and from this farm B received 20 gallons daily. Diagrammatically the situation was as follows:


MRS. X'S DAIRY FARM
FORTY GALLONS DAILY
TWENTY GALLONS DAILY
MR. A'S DAIRY FARM
THREE SUSPECTED CASES OF TYPHOID, WITH ONSETS FROM OCT. 1 TO OCT. 17
TWENTY-ONE DAIRY FARMS SHIPPING TO B
MR. A'S DAIRY
MR. B'S DAIRY
TWENTY-THREE CASES OF TYPHOID, WITH ONSETS FROM SEPT. 24 TO OCT. 22
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A most careful investigation was made, but no history of suspicious illness could be discovered among those who were concerned in handling the milk at the dairy of A, at the dairy of B, or at any of the farms supplying either A or B with milk. All the facts, however, seemed to point to the farm of Mrs. X as the source of the infection.

About 64 gallons of milk were produced on the farm of Mrs. X daily. About 40 gallons (in cans) went to dairyman A, about 20 gallons (in cans) to dairyman B, and about 4 gallons (in bottles) were sold to eleven families along the road which the wagon traveled on its way to A's dairy. A house-to-house canvass was made of the homes to which milk was retailed by Mrs. X. The eleven families consisted of about fifty-five persons all told. In only one household was any suspicious illness found. Here a mother and two children were sick. The mother took to her bed on October 3 with a high fever. She remained in bed for about eight or ten days, but was not attended by a physician. Her

blood gave a positive Widal reaction when examined at the Hygienic Laboratory on October 16. One child, about 5 years of age, began to complain about October 8, and on October 15 was sick in bed with a temperature of 103.5. His blood on that date gave a negative Widal reaction. The second child, aged about 3, took to bed about October 17. Both children had fever about ten days; in both stomatitis developed a few days after definite onset of fever, and the diagnosis made by the attending physician was "stomatitis." The facts that the onset of the first case was synchronous with the outbreak in Georgetown, and that the patient's blood gave a positive Widal reaction, suggested strongly that this case was typhoid fever whatever the other two cases may have been.

The sanitary condition of the farm of Mrs. X and the way in which milk was handled there were such as not reasonably to preclude infection from reaching the milk (by hands of persons, by flies, etc.) if infection existed on the farm. The dairy-house was located within a few feet of the stable and was not screened. Flies were abundant. The privy was located about fifty feet from the dairy-house. The privy contents went directly on the ground, being partially retained as a heap by a few boards fixed at the back of the privy. Chickens had access to the privy contents and to the yard around the dairy-house, in which milk cans were set. They had access also to the ground around and to the platform over the well from which the farm's water supply was obtained. The well was down hill and about 450 feet from the privy. A few feet from the well was a housed-in spring, and in the spring box the cans of milk were placed to be kept cool. Sand was used for scouring the milk cans and was obtained for this purpose, it was said, from the bed of the stream having its origin in the spring on the place.

Those engaged in milking the cows and handling the milk consisted of Mrs. X, a son, and three hired colored men. In addition to the above there lived on the farm in a house about 1,000 feet from that of Mrs. X and the dairy-house the family of one of the hired men, consisting of a wife and seven children, making on the farm thirteen persons all told. No history of any recent illness among the persons on the farm could be ascertained. The last case of typhoid fever that was known to have occurred on the place was that of a school teacher, who about seven years previously had boarded there. About two or three months after he went to the farm he was taken down with typhoid fever and died. At the time of the investigation the only persons living on the farm who gave a history of ever having had typhoid fever were Mrs. X, who had had it eighteen years before, and one of the employés, who had had it eight years before; but during the attack neither Mrs. X nor the hired man had lived on this farm.

A careful inquiry as to recent sickness on other places in the neighborhood of the farm was made, but no history of any illness could be obtained. As it seemed that there had been no actual case of typhoid fever to account for the infection, and that all the evidence still suggested strongly that there had been infection on this farm, the possibility of some one on the place being a typhoid bacillus carrier suggested itself to us and an investigation with this possibility in view was begun.

DISCOVERY OF BACILLUS-CARRIER

On October 13 specimens of stools and urine from all the persons on the farm were obtained and examined for the presence of the typhoid bacillus. The examinations were made by Passed Assistant Surgeon L. L. Lumsden, assisted by Dr. Walter Cannon, at the Hygienic Laboratory of the Public Health and Marine-Hospital Service. All the specimens were negative for *B. typhosus* except the specimen of feces from Mrs. X. This specimen showed on the Endo plates a large number of colonies typical for growth of *B. typhosus* on this medium. Eleven of these colonies were "fished" and planted in broth tubes. Every one of the eleven colonies proved by subsequent and extensive studies to be of a bacillus which morphologically, culturally and in serum reactions responded typically to all of the tests required to identify it as the typhoid bacillus.

EFFECT OF SHUTTING OFF MILK SUPPLIED FROM FARM OF BACILLUS-CARRIER

The positive finding of the bacillus in the feces was determined on October 16 and on that date the sale in the District of Columbia of milk from Mrs. X's farm was discontinued by order of the health officer. Eight days later, October 24, the last case occurring in the outbreak of typhoid fever among the customers of dairymen A and B had its onset of definite symptoms of typhoid fever.

During the thirty days subsequent to October 24 not a single case of typhoid fever developed among the customers of either of these dairymen, although they continued without interruption to sell milk from all the farms which had been supplying them except that of Mrs. X.

INFECTIVENESS OF BACILLUS-CARRIERS

Unfortunately, Mrs. X so far has declined to submit further specimens for examination, so we can not report now on the persistence of the bacilli in her feces. Her subsequent history in this regard would, of course, throw some light on the question as to whether she is a chronic typhoid bacillus-carrier (and perhaps has been since her attack of typhoid fever eighteen years ago), or whether she was what we may term an acute bacillus-carrier—that is, a person who becoming infected harbors bacilli and discharges them in the excreta for a few days or weeks, and who yet, due to some immunity rendered by previous attack or otherwise, does not have the symptoms of the disease.

If this woman has been a bacillus-carrier since her attack of typhoid fever eighteen years ago it appears somewhat remarkable, since she has been in the dairy-farm business for five years or more, that infection has not sooner reached the milk and caused a pronounced outbreak. Furthermore, the infection, judging by the dates of onset of the cases, seemed to be more or less constantly in the milk for a period of about a month.

One exercising ordinary care as to cleanliness of person, however, as Mrs. X apparently did, would not frequently contaminate directly with fecal matter the milk handled. Then, too, considering the number and duration of the intervals in which the fecal matter of pronounced chronic bacillus-carriers is apparently free of typhoid bacilli, a number of contaminations with fecal matter might be necessary before infection would occur in which organisms alive and virulent, and sufficiently hardy to survive, would be introduced into the milk. If the view is taken that the infection was conveyed to

the milk indirectly through the privy contents, which by means of flies or the feet of the chickens or in any other way reached the milk cans or the water supply, it is still readily conceivable that a number of contaminations of the milk with the excreta might have occurred during the several years previous without causing infection. The contamination of the milk with typhoid bacilli once having occurred, it is readily conceivable that the infection could survive on the dairy utensils, and so more or less constantly infect the milk for some days or even weeks.

SUMMING UP OF EVIDENCE THAT THE OUTBREAK WAS CAUSED BY INFECTION IN MILK

1. There was a sudden onset of a disproportionately large number of cases among the customers of the two dairymen supplying the suspected milk.

2. A typhoid bacillus-carrier was discovered among the persons handling the milk on the only dairy farm supplying both dairymen with milk.

3. There was no occurrence of any unusual number of cases among persons living in the same sections of the city as those affected but receiving milk from other sources.

4. There was no occurrence of an unusual number of cases in sections of the city other than those supplied with the suspected milk.

5. Most of the cases occurred among well-to-do persons, and among those who used milk freely, women and children principally being affected. Thus of the 54 patients there were, among those who used milk as a beverage, 30 cases; among those who used it on fruits and cereals freely 20, among those who used it in coffee only 2, and of those who used it as ice cream only 2. There were 15 instances in which the members of the household who used milk freely were affected, while those who used none or used it more sparingly, escaped.

6. Many of the cases had a sudden onset of definite symptoms without recognizable prodromes, and many ran a mild course.

7. All other known possible factors were eliminated as cause common to any considerable number of the cases.

8. The outbreak suddenly ceased ten days after the suspected milk supply was shut off, although all the other suggested possible factors continued, so far as could be learned, about as they were before and during the outbreak.

LESSONS TAUGHT BY OUTBREAK

Had dairymen A and B pasteurized their supply of milk before delivering it to their customers, the infection in the milk received from the dairy farm would have been destroyed and this outbreak of typhoid fever would not have occurred.

Had the sanitary arrangements been perfect on the farm of Mrs. X. and had much greater care been exercised there in handling the milk, the infection might not have reached the milk.

The possibility that there may be typhoid bacillus-carriers among persons handling milk, and the liability that these carriers may get infected excreta on their hands from time to time, should be considered in determining if any degree of cleanliness less than absolute surgical cleanliness would be sufficient to safeguard milk from infection.

To enforce officially such extreme care in the handling of the milk supply of a large city would be a difficult, if not an impracticable task, while official supervision of the pasteurization of the milk supply of a large city, if done at distributing depots, would be entirely practicable, much less expensive, and a more nearly certain safeguard against infection.

THE RATE OF COOLING OF SEVERAL POULTICE MASSES *

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The value of poultices for most purposes being proportional to their retention of heat, it appeared desirable to compare the rate of cooling of several poultice masses. A comparison of the easily prepared linseed poultice and the official clay poultice, cataplasma kaolini, seemed particularly desirable and these were controlled most carefully.

Experiments with small quantities in large test-tubes proved unsatisfactory, and the following disposition, suggested by Dr. Sollmann, was finally adopted:

The poultice masses were placed in bottles measuring 6 by 14 cm. to a depth of 9.5 cm. A thermometer was supported in each bottle by a cork. The bulb of the thermometer was adjusted 2.5 cm. from the bottom and 2.75 cm. from the sides. The bottle of cataplasma kaolin was heated in a boiling water bath and when a temperature of 70 to 80 degrees C. was reached the bottle of freshly-prepared hot linseed poultice mass (one part of ground linseed added to two and one-half parts of boiling water) was placed in the same bath. When the mixtures attained a fairly constant temperature, 94 to 98 degrees, they were transferred to a second large but shallow water bath, 2 to 2.5 cm. in depth, kept at 37 to 40 degrees C. The parts of the bottles above the level of the water were wrapped in cotton. This arrangement was thought to approach as nearly as possible the conditions of the poultices when applied to the body. The temperatures were recorded at ten-minute intervals until the temperature of the bath was reached. Three sets of experiments were made, two bottles of each specimen being used in each experiment. Between 85 and 95 degrees the linseed mixture swelled considerably, forcing a small quantity from the bottle, which had to be removed in order that the thermometer might be accurately placed. When the mass cooled a depression was left in the center, which brought the thermometer bulb nearer the surface than in the other mixtures and might have caused an apparent increase of the rate of cooling of the linseed mass.

In another set of experiments the difference in the rate of cooling at the surface and at the center was observed by placing two thermometers in jars measuring 18 by 17 cm. A central thermometer, as in the previous experiment, was placed with the bulb 2.5 cm. from the bottom and equidistant (2.75 cm.) from the sides, and a second, or "outer" thermometer 1.25 cm. from the sides of the jar. The mixtures in the bottles were 8 cm. in depth.

As the two thermometers ran practically parallel with a difference of but 1 or 2 degrees, these experiments, five in all, are classed with the previous experiments.

The results were plotted in curves in which the

* From the Pharmacological Laboratory of Western Reserve University.

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-ninth Annual Session held at Chicago, June, 1908.

abscissæ represent the time in minutes and the ordinates the temperatures in degrees C. The curves agree quite closely and are combined as in the illustration, Figure 1. During the first twenty minutes, down to 75 degrees, the temperatures ran fairly parallel; then the temperature of the linseed mixture remained about

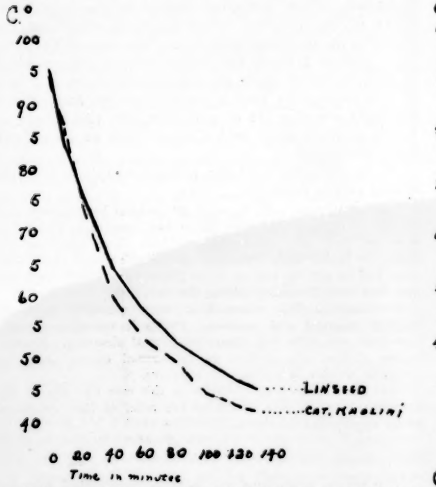

Fig. 1.—Curves showing rate of cooling of linseed poultices and cataplasma kaolini; composite of eight experiments.

Fig. 2.—Curves showing rate of cooling of oatmeal, bread, cornmeal and linseed poultices; composite of three experiments.

5 degrees above that of the cataplasma kaolini until the close of the experiment.

For purposes of comparison a set of three experiments were made with other poultice materials, oatmeal, cornmeal and bread, and water and petrolatum also. The mixtures were made of the same consistency as the linseed mixture. The poultice masses formed a temperature curve similar to that of the linseed poultice, though somewhat higher and from 2 to 8 degrees higher than that of the clay poultice; the petrolatum and water curves were practically the same as that of the cataplasma kaolini, the petrolatum a little above and the water a little below that of the kaolini mixture (Figs. 2 and 3).

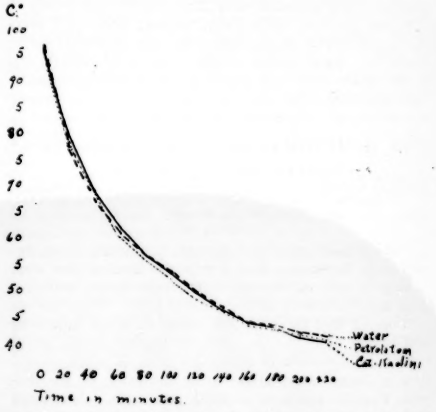

Fig. 3.—Curves showing rate of cooling of water, petrolatum and cataplasma kaolini; composite of three experiments.

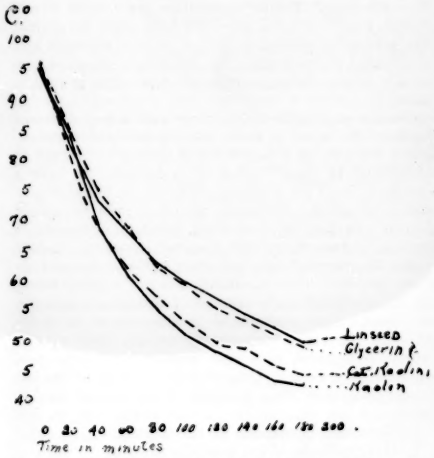

Fig. 4.—Curves showing rate of cooling of linseed poultices, glycerin, cataplasma kaolini and kaolin; composite of two experiments.

To determine if possible the reason for the more rapid cooling of the cataplasma kaolini two experiments were made comparing its chief constituents, glycerin and kaolin (clay) with the official mixture and with the linseed poultice mass. The curves of the linseed mass and the glycerin are practically the same, while that of the kaolin falls somewhat below the clay poultice curves (Fig. 4).

CONCLUSIONS

While the rate of cooling is not conspicuously different for the cataplasma kaolini and the linseed poultice mass, the difference is constantly in favor of the linseed poultice mass.

Dry kaolin cools appreciably faster than the cataplasma, while glycerin cools considerably more slowly.

Other poultice masses, viz., oatmeal, bread and cornmeal, apparently retain their heat even somewhat better than the linseed mass; on the other hand, water cools at about the same rate as cataplasma kaolini and petrolatum a trifle faster.

THE SYMPTOMATOLOGY OF PROSTATITIS *

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The classical symptoms of acute prostatitis are so apparent in every case that I mention them at this time merely by way of contrast to the more varied and protean manifestations of the chronic form. With the exception of rare cases of metastases in acute infections and injury of either the prostatic urethra or the gland itself, our attention in nearly all cases of acute prostatitis is immediately attracted to the cause of the disease, viz.: an acute or subacute gonorrhea. Associated with this we observe the frequent painful passage of a small, feebly ejected stream of urine, often followed by terminal hematuria and leading occasionally to complete retention. Digital exploration per rectum reveals a large, boggy, sensitive prostrate many times the normal size, producing painful defecation, painful erections and deep-seated perineal pain. All these signs are so unmistakable that a diagnosis of acute prostatitis is readily made.

Chronic prostatitis, however, presents a very different picture. In order to arrive intelligently and correctly at the diagnosis of a malady whose manifestations are so varied and at times obscure, it is necessary to have a classification of the symptoms that can be followed as a routine measure. Otherwise we often miss important details. Taylor,[1] of New York, divides the symptoms into two classes: first, those observed in patients mostly under 30 years of age, and second, those observed in older patients. This classification is not without value, for the multifarious symptoms of sexual neurasthenia are usually most pronounced in the younger subjects, while in the older patients the urinary and referred type of symptoms, as a rule, predominate. The preponderance of nervous symptoms in many cases has led Peyer† to classify three neuroses of the prostate as follows:

1. General hyperesthesia of the prostate.
2. Hyperesthesia of the prostatic urethra.
3. Irritability of the neck of the bladder.

On the whole, however, I think that the classification of symptoms as suggested by Young,[2] of Baltimore, is the more comprehensive and is suitable to all cases. Young divides the symptoms into: 1, urinary; 2, sexual, and, 3, referred.

URINARY SYMPTOMS

The urinary symptoms may be manifested by frequency, often more noticeable at night than during the day; pain at the beginning, during, or at the end of urination; slow or difficult urination; hesitation in starting the stream; urgency and dribbling at the end of urination. These symptoms depend on the hypersensibility of the terminal nerve filaments supplying the prostate, the prostatic urethra, and the neck of the bladder. And as a result the sensory stimuli are produced in such an excess above the normal that there is a lack of coordination in that apparently simple and yet exceedingly complex act of urination, the phenomena of which we must agree with Casper,[3] that we do not yet fully understand.

As an illustration of the urinary symptoms the following case is reported:

CASE 1.—*Patient.*—M. R., aged 30, general health good, not anemic or neurasthenic; has never had gonorrhea, and urine does not show any abnormality. About three years ago he began to notice some frequency of urination, and since that time had to get up two or three times every night, and has also had some frequency during the day.

Examination.—This revealed a very sensitive prostate, slightly enlarged and nodular. Prostatic secretion showed numerous pus cells, but otherwise normal elements. Examination showed the urethra to be normal except that the prostatic urethra is excessively sensitive.

That the frequency of urination in this case was due to the chronic prostatitis was shown by the relief of that symptom under appropriate treatment.

SEXUAL SYMPTOMS

The sexual symptoms are usually manifested first by disturbing and often painful erections due to a condition of erethism, which after a time is followed by diminished vigor with imperfect erections, premature ejaculation, frequent nocturnal emissions, etc. These patients are usually neurasthenic. The basis for these symptoms lies in the pathologic condition which is the result of chronic inflammatory changes affecting the terminal filaments of the pudic nerve in the prostate. The phenomena of erection is not fully understood, but experiments on dogs have shown that section of the pudic nerve completely abolishes it.

The following case illustrates this class of symptoms:

CASE 2.—*Patient.*—B. W., aged 35, general health excellent and physically very strong, expression indicating strong force of character. He had gonorrhea five years ago. The attack was not very severe and the patient had no complications, but never got entirely well. He noticed intermittent discharge and had some discomfort in the perineum. Finally he began to notice premature ejaculations and gradually the erections became weaker and more imperfect until he was practically impotent. Worry over his impotency eventually produced a deplorable condition of neurasthenia. He tried all sorts of treatment, even the suggestion treatment, but the suggestions did not reach the prostate.

Examination.—This showed urine, first glass cloudy and containing shreds, second and third glasses fairly clear. Occasionally the urine was very cloudy with phosphates. The prostate was only slightly enlarged, but very sensitive, not distinctly nodular, but slightly indurated in region near the seminal vesicles. The seminal vesicles were palpable, but not indurated. The prostatic secretion showed pus cells in considerable numbers, but otherwise normal elements. The urethra was excessively sensitive, especially in the prostatic portion.

A few months of local treatment by vigorous massage, irrigations, sounds up to 33 F., application of nitrate of silver

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* Read before the Southern Medical Association, Atlanta, Ga., November, 1908.

1. Taylor: Genitourinary Diseases, 1906.

† King, A. F.: Washington Med. Ann., 1907, p. 101.

2. Young, Geraghty and Stevens: Johns Hopkins Hosp. Rep., 1906, xiii.

3. Casper: Genitourinary Diseases, 1906.

to the urethra, and absolutely no medicines internally have improved this patient so much that intercourse is possible and fairly satisfactory, and he confidently expects a complete cure, which I think is reasonably assured.

REFERRED SYMPTOMS

Before taking up the referred symptoms a slight reference to the nerve supply of the prostate and the reasons for the interpretations of the referred pains may be permissible. The nerve supply of the prostate is only briefly referred to in the various works on anatomy. The prostate receives its sensory spinal fibers through the pudic nerve and sympathetic fibers from the hypogastric plexus. The terminal filaments of the sensory fibers in the prostate and prostatic urethra are endowed with genital corpuscles or end-bulbs of Krause. Young[2] states that he has found beneath the dense tissue of the capsule of the prostate numerous nerve bundles containing large numbers of ganglion cells. Viktor Blum[4] says that there are in the periprostatic tissues surrounding the true capsule many corpuscles similar to the end-bulbs of Krause.

With such an elaborate and highly specialized apparatus for the reception and conveyance of sensory impressions we can readily understand the influence which this organ exerts on the individual. Through the influence exerted on these highly specialized and sensitive nerve-endings by the pathologic conditions resulting from chronic inflammation, painful impressions are carried along the afferent sensory fibers and by an irradiation, or sort of overflow, are felt in the area of distribution of those somatic sensory fibers taking origin from the same spinal segment as the visceral sensory fibers supplying the prostate.

Many writers have quoted Head as saying that the prostate receives its spinal sensory fibers from the three lower dorsal and upper three sacral segments. It seems paradoxical that the lumbar segments should be skipped. Piersol,[5] in a more recent investigation, states that the prostate receives its spinal fibers through the pudic nerve, which receives most of its fibers from the second, third and fourth sacral, but also receives some fibers as high as the fifth lumbar. Thus we can readily understand the meaning of intense pruritus ani through the inferior hemorrhoidal nerve, the pain and feeling of weight in the perineum through the perineal nerves. Patients with chronic prostatitis very frequently suffer with pains in the back and down the legs, which is often diagnosed as lumbago and sciatica, but which is, in fact, referred pain from the prostate and is readily explained by the intimate relation existing between the roots of the pudic nerve with the sacral and lumbar plexuses. Cases have been reported in which the symptoms simulated renal colic so closely that nephrotomy was performed and no stone found; the patients were afterward cured by prostatic massage.

The following case illustrates well-marked referred symptoms:

CASE 3.—*Patient.*—L. G., aged 43, had several attacks of gonorrhea fifteen years ago. The attacks were not very severe, but he never recovered entirely. About two years ago he began to suffer with pains in the back and down the legs. Condition grew worse until walking was decidedly painful. He was treated for rheumatism and sent to Hot Springs for a while, but had no relief.

Examination.—This revealed a prostate, enlarged, firm, nodular, indurated at upper and outer poles and sensitive to pressure. The fact that this prostate was firm and resistant to touch indicates a process of long standing in which much of the round-celled infiltration had become converted into fibrous tissue. The prostatic secretion showed enormous numbers of pus cells and very few lecithin bodies. The secretion from the seminal vessels showed many motionless spermatozoa.

Several months of treatment by prostatic massage, irrigations, Kollman dilator, etc., has improved the motility of the spermatozoa, improved the patient's general health and relieved to a great extent his pains. The chronicity of the case, however, and the amount of new-formed fibrous tissue in the prostate do not make me very sanguine as to a complete cure, at least so far as the anatomic structure of the prostate is concerned.

RESIDUAL URINE

A symptom that is sometimes observed in chronic prostatitis that is especially interesting is the presence of residual urine. The following case recently came under my observation.

CASE 4.—*Patient.*—H. J., aged 44, never had gonorrhea. Five years ago he had a very severe attack of dysentery, which was diagnosed as amebic dysentery. One year later he had another attack and the following year another. Ever since the first attack he suffered with frequent painful urination which became progressively worse until he urinated almost every hour during the day, and the act of urination was attended with violent straining.

Examination.—This revealed a prostate slightly enlarged, sensitive and nodular. The prostatic secretion showed many pus cells. The urethra was sensitive, but a 28 F. sound could be passed into the bladder, and a Kollman dilator in the posterior urethra could be opened to 31 F. The residual urine present amounted to 300 c.c., which amount was found on several occasions. The bladder capacity was 400 c.c. During sleep the vesical sphincter apparently relaxed and the urine flowed out without the knowledge of the patient. Catheterization immediately after sleeping showed only a small amount of residual urine. With the assistance of Dr. Fowler, cystoscopy was performed, and we found a bladder markedly trabeculated, numerous small diverticuli being seen between the trabeculæ, giving evidence of the intense straining efforts of urination. No stone was found. The lateral lobes of the prostate were slightly enlarged, a small furrow showing in the upper anterior margin of the vesical orifice. There was a slight median bar present which could not be felt per rectum. The amount of residual urine present, however, was out of all proportion to the amount of obstruction and was due to the spasmodic contraction of the vesical sphincter. This, in turn, was the result of the chronic inflammatory changes in the prostate.

Obscure vesical symptoms are often the prodromes of locomotor ataxia, and patients in the early stages of this disease frequently consult the urologist before they do the neurologist. In the case just narrated, however, there was no history of syphilis, the knee-jerks were normal, there were no lightning pains, and no unsteadiness of gait; pupils reacted to both light and accommodation. In short, I think we can safely exclude tabes.

POSITIVE SIGN OF CHRONIC PROSTATITIS

In most cases sufficient symptoms are present to direct our attention to the prostate at once. There are some cases, however, in which no definite symptoms are present, or at least the symptoms are so slight that the patient is entirely unaware that he is suffering from any prostatic trouble. Rectal examination usually shows some irregularity of the surface of the gland, slight enlargement, induration, nodulation or excessive sensitiveness. These signs, too, may also be lacking in some cases.

4. Blum, Viktor: Symptomatologie der urogenitalen Erkrankungen, 1908.
5. Piersol: Anatomy, 1907.

There is one definite positive sign, however, which is always pathognomonic of chronic prostatitis, and that is the presence of pus cells in the prostatic secretion.

The normal prostatic fluid presents some very interesting features. Macroscopically, the prostatic secretion is a grayish or bluish-white, homogeneous, opalescent fluid, either slightly alkaline or amphoteric in reaction. If in the process of obtaining the fluid for examination some of the secretion of the seminal vesicles is also expressed it is recognized as semisolid, transparent masses. In a very few minutes, however, this is liquefied by the prostatic secretion and becomes intimately mixed with it.

Microscopically, the most striking feature of the prostatic secretion is the presence of large numbers of lecithin bodies; in fact, they make up the bulk of the secretion. They are seen as small round bodies, of various sizes, usually smaller than a red blood corpuscle. Their composition is exceedingly complex, but, broadly speaking, they may be regarded as a phosphorized, fatty substance. The other elements noticed are epithelial cells, some granular cells in which no nuclei can be demonstrated and whose origin is in doubt. Occasionally corpora amylacea are seen. In addition to the elements named, Wederhake has called attention to small bodies often seen which are of uniform size, smaller than an ordinary leucocyte, and whose origin and significance are not known and to which he has given the name of *Samen-Kornchen*. Young has also described another element, minute bodies, smaller than the lecithin bodies, and whose origin and significance are also unknown.

The very interesting experiments of Nagel[6] have demonstrated the value of the prostatic fluid in maintaining the life and motility of the spermatozoa. It is more important than is generally supposed. He has found that the spermatozoa when separated from the prostatic fluid rapidly lose their motility and die. Mixed with prostatic fluid, however, they maintain their vitality for days and can even resist for a time the effect of strong acids and alkalies. It has also been shown that motionless spermatozoa have resumed their motility when mixed with prostatic secretion even from another individual. The prostatic fluid also acts as a lubricant. The substance in the prostatic fluid which protects and vitalizes the spermatozoa is in all probability the lecithin bodies.

In chronic prostatitis, simultaneous with the appearance of pus cells, especially in large numbers, we notice the diminution of the lecithin bodies. In severe and very chronic cases, the lecithin bodies are often entirely absent and the spermatozoa, if present, are motionless. This disappearance of the lecithin bodies probably explains the sterility of men suffering from severe and long-continued prostatitis. Strangely enough, in favorable cases, the reappearance of the normal lecithin bodies and the disappearance of the pus cells seems to progress *pari passu* with the improvement of the patient.

MICROSCOPIC STUDY OF PROSTATIC FLUID

The microscopic study of the prostatic fluid presents peculiar difficulties. For while macroscopically it is a homogeneous fluid, microscopically it is found to be decidedly heterogeneous. Chemically it is a mixture of proteid and fatty substances and salts of various kinds, especially phosphates and carbonates. On account of this complexity of composition smears made and stained in the ordinary way are not satisfactory, the salts especially interfering with the staining. After numerous experiments with various methods I have found the following plan satisfactory:

Patients are always instructed to come to the office with a full bladder, and the urine is passed just before the massage. The secretion is allowed to fall into a small glass and the macroscopic appearance first noted. Any lack of homogeneity indicates some pathologic condition, and shreds or flakes of pus are often seen. Even to the practiced eye, however, the secretion may appear perfectly homogeneous and yet contain pus cells. A drop of the secretion is placed on a slide, covered with a cover glass and examined with a 1/6 objective. The normal elements are all easily seen and pus cells, if in any amount, can also be seen.

If the pus cells are few in number and not very distinct, the second step is now resorted to. A drop of the secretion is placed on a slide, and on this is placed a drop of solution of methylene blue, which has been strongly acidulated with acetic acid. This, of course, stains only faintly, but it brings out the nuclei of the pus cells beautifully, and if there are any pus cells on the slide they can easily be found.

If now a further study of the cytology and bacteriology of the secretion is desired, the third step is resorted to. The secretion is placed in a centrifuge tube and the tube filled up with normal salt solution. The tube is inverted several times to mix the contents thoroughly, and then placed in the centrifuge for a few minutes. The supernatant liquid is now pipetted off and more salt solution added and again placed in the centrifuge for several minutes. This can be repeated if necessary. A smear made from the sediment can now be stained and examined satisfactorily. This plan is especially valuable for the detection and recognition of the various bacteria.

SYMPTOMS OF CURE

We finally come to what are probably the most important and interesting of all the symptoms; that is, the symptoms of cure. As pointed out before, the subjective symptoms may all be present and yet the prostate be chronically inflamed. As a rule, however, under appropriate treatment, the enlarged, nodular, sensitive prostate gradually becomes more normal in size and consistency and less sensitive to touch. In patients with marked subjective symptoms the improvement in the patient's morbid sensations seems to progress *pari passu* with the improvement in the pathologic conditions in the prostate.

The question as to whether or not in a prostate, once inflamed for any length of time, especially if the deeper structures of the gland are involved, do the pus cells ever entirely disappear, is still *sub judice*. In some cases at least they persist for a long time.

The reappearance, however, of the lecithin bodies in normal amount and the progressive decrease of the pus cells is always a good omen. The spermatozoa are not unfavorably affected by the presence in the prostatic secretion of pus in small amounts, especially if the normal elements of the prostatic fluid are present. This is particularly true as regards the presence of the lecithin bodies. A prostate in which part of the secreting structure has been destroyed by chronic inflammation and the normal parenchyma replaced by fibrous tissue, of

6. Nagel, W.: Handbuch der Physiologie des Menschen, 1906.

course, remains in that condition for all time. But the prostate seems to possess that compensatory power with which Nature has endowed our other organs so that unless too much of the glandular parenchyma has been destroyed the secretion is still produced in quantities sufficient for the fulfillment of the normal physiologic function of the gland.

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TREATMENT OF TUBERCULOUS PATIENTS IN THEIR HOMES AND IN PLACES OTHER THAN SANATORIA

WITH SPECIAL REFERENCE TO THE PSYCHIC SIDE OF THEIR MANAGEMENT *

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When requested to prepare a paper on the home treatment of tuberculosis, I felt some hesitancy in acceding, not because the subject was not of great interest to me, but because it has been associated by some of the profession with the views of those who believe that pulmonary tuberculosis can be better treated in the patient's home than in the very best of climates elsewhere.

Such a view is so much opposed to my experience, and to that, I believe, of the profession as a whole, that I would not wish to seem to support it. If the term, however, as my title implies, is used to describe the treatment of tuberculosis outside of closed sanatoria, whether in the patient's home town or in some especially favorable climate, and deals with obtaining for all patients those advantages which were supposed to be obtainable only in special institutions, it is a subject which interests me deeply and one on which I am glad to have an opportunity to write, for it is certainly one of the most important in therapeutics and must be solved if we are to succeed in suppressing this disease.

Hygienic and dietetic treatment is to-day universally recognized as an essential part of the management of pulmonary tuberculosis, and whatever advances we have made, or may yet make, in specific and drug therapy, hygiene, air and diet may be safely stated to be a fundamental part of any complete and satisfactory treatment.

These methods were worked out originally in closed sanatoria by such men as Brehmer, Dettweiler, Trudeau and many others, and it was long the general impression that they demanded the special facilities of such institutions and could not be carried on properly outside of their walls. Patients in their own homes or living in climatic resorts, but not entering such sanatoria, have too often been allowed to live very much as they wished, with no properly strict supervision or discipline, and the difference between the results obtained in cases of patients handled in this slipshod way and those systematically treated in institutions has been used to support this view.

Being dissatisfied with the manner in which these invaluable methods were ordinarily applied in private practice, and yet convinced of the absolute necessity of their use, I have for a number of years tried to secure for my patients in private houses the general hygienic arrangements and the teaching and disciplinary measures of the closed sanatorium, with results which have satisfied me that we can obtain for our patients, outside such places, all their essential conditions and their results. Indeed, in view of the very limited capacity of all the institutions of this sort, the outlook for the majority of the tuberculous, were this not true, would indeed be sad, for but a small fraction of them could possibly get accommodation in such sanatoria. Hence it becomes a duty to encourage the adoption of such methods everywhere, and to urge the profession to acquire that skill in handling pulmonary tuberculosis which has given sanatorium physicians their excellent success; in short, to teach doctors how to manage the hygienic cure outside of closed sanatoria.

This, then, I take it, is the real aim in the home treatment of tuberculosis: a treatment which is equally applicable in or out of climatic resorts, and whose value in no way affects the question of the utility of climatic treatment, which, therefore, need not be touched on here.

SPECIAL CONDITIONS OBTAINED IN SANATORIA

Since, as noted, this treatment was first and most fully developed in sanatoria, it will be well to consider what are the special conditions which are obtained there in order to see if these can be secured adequately outside their walls.

Analyzed, then, to their simplest terms, these are:

1. The personal medical oversight of the patient.
2. Strict discipline and close supervision.
3. Teaching and instruction in methods of life.
4. The systematic and hygienic arrangement of the patient's life.
5. Nursing.
6. Proper housing, location and feeding.
7. Suitable climate.
8. The effect of the example of other patients and of the *esprit de corps*.

Of these eight desiderata, all save the invaluable effects of the last two can be had in all cases, granted a determined and forceful doctor and a reasonably intelligent, earnest and obedient patient, in fairly good circumstances. True, to obtain them in a satisfactory degree will unquestionably call for much work on the part of the doctor, a great interest in his cases, and a strong will; for a chronic disease, such as this is, makes great demands on the patience and perseverance of both physician and patient; but if the doctor is willing to enter closely into the lives and to study the personality of his charges—and only he who is so willing can succeed with them—he can get a complete control of them, and will find pulmonary tuberculosis as interesting and, if early diagnosed, as hopeful as any other disease; nor will he discover any of that monotonous sameness which is supposed to characterize it.

Let us now consider, seriatim, these different conditions which are obtainable in sanatoria.

1. *Personal Medical Oversight.*—That this is essential, all who have handled tuberculosis will recognize; hence these patients must not be left to manage their lives according to their own best judgment, with perhaps occasionally a little general advice, but need to see the physician often and to receive instruction and stimulus from him. Many would suppose that unless the physician lives in the house with his patient, seeing him frequently during the day, as does the sanatorium doctor, personal medical oversight could not be had, but I have found this not to be the case. If the physician is capable of impressing his will and his personality on

* Read before the Clinical Section of the International Congress on Tuberculosis, Washington, D. C., Oct. 2, 1908.

his patients he can get the closest and most detailed supervision and control of their lives by seeing them twice, or at most thrice, a week; when they are once well trained once a week is sufficient. Indeed, by seeing our patients too frequently, as we do if we live in the house with them, we are apt to lose that objectivity in our attitude toward them which is so important, and to lessen rather than to increase our control.

If the patient is well taught the aims and purposes of the treatment, is convinced of the doctor's interest in his case, and knows that he must report to him every occurrence in a written diary of his life, it is surprising how close the supervision can be. The use of such diaries or record-books is a most important aid in the control of our cases, and it is difficult to keep in sufficiently close touch with patients without their use.

I have used record-books now for a number of years and find that they keep the doctor in most intimate touch with the feelings as well as doings of his charges, and that through them he will learn many things very closely affecting their condition, which it is important for him to know, yet of which otherwise he would never hear. The patient writes not merely a physical record of the fluctuations of his temperature, the amount and nature of his food, exercise and amusements, etc., for all of which there should be places in the page, but — and I believe this even more important — a diary of his mental life and of those occurrences of the day which affect not so much his body as spirit.

Such records are of inestimable benefit to the doctor in helping him to understand his patient and to guide him wisely, for in no disease is the effect in mind over body more in evidence than in pulmonary tuberculosis. We can not succeed with it if we treat the physical but neglect the mental side of our charges.

In a small percentage of one's patients, the very nervous and excitable, such as are so often our Jewish patients, or in those lacking the moral backbone to face the facts and fight them, their nervousness can be increased by such record-keeping. By such patients the practice must be discontinued, but in a very large majority the keeping of such diaries proves helpful and interesting to the patient, aside from its value to the doctor, and I have had many people assure me that keeping their records stimulated them to obedience and to more faithful living.

The more intelligent the patient, the better will these books be kept; some patients are able to give us a vivid account of all that happens to them so that we can know exactly all that they felt and did; some are only able to record the bald physical facts of the day, and this poorly enough; while the majority keep a diary which, while not as full as it might be, is a great help to us in following their lives. I devised these record-books to be used by patients in private practice, and I had not supposed that they would be applicable to the class of patients whom we see in our dispensaries, who are usually of a lower grade of mentality. Dr. Joseph Pratt of Boston, however, who has adopted them in his admirable tuberculosis class work, has shown that they can be used with most excellent results in these patients, and through his instrumentality they have been pretty extensively and successfully used in numerous other classes and dispensaries throughout the country.

By using such books, whose entries should be carefully scanned at each visit, and by seeing our cases once or twice a week, we can make the supervision of the patients perfect, and they will become so interested in their own progress that the treatment is deprived of much of the tedium that can handicap it.

2. *Discipline and Supervision.*—Many excellent physicians are poor disciplinarians, neither giving such detailed instructions as are necessary nor seeing that they are strictly carried out. This, however, is a matter of the personality of the physician and does not depend on whether he treats his patients in private or in a sanatorium. Discipline, however close the supervision may be, must rest, save in penal institutions, more on the good will and willing cooperation of the patient than on his fear of punishment. While the doctor must have a strong will and be a good disciplinarian, and while the patient should be afraid to disobey him, the discipline will be hollow and unreal if it depends only or chiefly on fear, or is maintained by spying. It can be satisfactory only when the patient obeys willingly from motives of self-interest and through his confidence in the physician. When such a feeling of confidence toward the doctor exists, and when the patient is made to realize that he and his physician are fellow workers toward the same end, and that by disobedience he is only hurting his own chances; when, moreover, he is made to see that getting well is no child's play, and that if he is to recover he must have the force to deny himself, the doctor need have no fear that his orders will be disobeyed behind his back. No sanatorium can show better discipline than can be obtained with patients thus trained.

3. *Teaching.*—In tuberculosis the relation of the doctor and his patient is, in one aspect, that of teacher and pupil, the latter coming not merely to regain health, but to learn from the former those truths which in after life will enable him to retain the health he has regained. Hence the physician who treats tuberculosis must be, I had almost said first and foremost, a teacher, and, like every good teacher, interested and hence interesting and capable of imparting his knowledge and his enthusiasm.

Granted the ability on the doctor's part to teach, instruction outside of the sanatorium can be most thorough and satisfactory, although, unless the patients are housed together, the individual patient will lose that not inconsiderable part of his teaching which he would receive from the example of his fellows. Many physicians do not believe that their patients should know anything about their sickness; but in tuberculosis, as Penzoldt[1] and many others have insisted, it is essential that the patient should understand something of the nature of the disease he has to fight before he can be expected to deny himself the many pleasures he must forego or bring himself to live a strictly regulated life. While it is by no means desirable that the patient should know too much about the extent of his trouble, he will fight his disease more intelligently and, therefore, better if he knows something of the wonderful way in which Nature opposes the advance of the enemy and how her ability to wage a successful warfare depends on the vitality of the individual cells, whose strength or weakness is so largely under his own control.

4. *Systematic and Hygienic Living.*—While it will take great care to secure, outside of a sanatorium, the system and order of such an institution, they can be obtained if the patient be intelligent and the doctor painstaking. He who makes a listless, half-hearted,

1. Penzoldt and Stintzing: Handbuch der Therapie innerer Krankheiten, III, Jena, 1898.

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planless attempt to recover from tuberculosis is sure to fail, but, granted the conditions already dwelt on and a careful oversight by the physician, the individual patient can systematize and live his life as well as those in sanatoria.

5. *Nursing.*—The necessity of trained nursing in pulmonary tuberculosis depends on the nature of the case. In my opinion, in incipient cases a nurse is not necessary at all save during some intercurrent condition, such as an exacerbation of the process or a hemorrhage; but the patient is rather the better for being thrown on his own responsibility and made to think for himself. In advanced cases with much fever, diarrhea, etc., a trained nurse is a necessity and an inexpressible comfort to the sick one, but, save in such cases, her constant presence while the patient is feeling well is a depressing reminder of sickness. Hence it is better to dispense with nurses, save in the cases cited.

6. *Location, Housing and Feeding.*—It is not always easy to secure for patients, especially if in restricted circumstances, either in their own homes or in resorts, accommodations which are as well arranged as to porches, rooms, orientation, ventilation, etc., as those in the best sanatoria; but it is surprising what excellent facilities we can obtain for our patients by some study of their homes and rearrangement of their surroundings. If a large southern room, with several windows and a porch opening off from it, can be had, sanatorium conditions can be duplicated; but, if not, by ingenuity in a rearrangement of houses and porches, or the building of shacks, excellent results can be obtained. For those in comfortable circumstances the task is easy, but in proportion as the circumstances of our patients are more and more restricted it becomes more and more difficult, and there is a point below which their financial state sets an almost hopeless handicap on the proper carrying out of this treatment.

Among that large class whose finances prohibit their leaving their home town much has been done in recent years in Boston, New York, Philadelphia, Chicago, Baltimore and elsewhere, either by removing the patients to the outskirts or by rearranging their homes, and the various tuberculosis dispensaries and classes in this country have done splendid work in this line.

The feeding of a patient, whether in or out of a sanatorium, depends on the availability of a good cook and housekeeper, a good market and a not too empty purse, and if these can be had, a good and varied table is always obtainable. The feeding of these patients, however, is so important that the doctor must take pains to satisfy himself as to the existence of these conditions and not take them for granted.

7. *Suitable Climate.*—It is neither appropriate nor desirable at this time to enter on the much discussed question of the essentiality or non-essentiality of climate in the treatment of pulmonary tuberculosis. My own view is that climate, while it will always be a secondary factor to proper care, discipline and feeding, is an invaluable aid in the treatment of this disease; one which, in all cases which offer possibility of cure, should never be dispensed with if means permit, and that with proper conditions it will greatly improve the best results that can be had in a patient's own town. Practically all sanatoria are in unusually favorable country climates, and most persons will admit that, other things being equal, a patient will do better the better the climate in which he is placed. While we try to place our sanatoria in favorable climates, however, and while those who can afford to get proper conditions there would be foolish not to avail themselves of the added advantages offered by a good climate, the vast majority of pulmonary tuberculosis patients are compelled by financial reasons to find recovery, if it be possible, in their home town. In the last two or three years many workers in this line have shown what can be accomplished in the way of amelioration, arrest, of even cure, in our large cities if the cases be favorable and if the physician be only thorough, painstaking, interested and a good teacher.

8. *Effect of Example and of "Esprit de Corps."*—The one important factor in the hygienic treatment which can not be had when we treat the patient in his own quarters is the effect on him of the example of other patients and of that *esprit de corps* which is developed among them, and both of which are powerful factors in sanatorium results. However intelligent and purposeful, determined and obedient, the patient may be, he will miss much in not having the stimulus which is obtained from living with other patients who, like himself, are seeking to recover health and whose example will constantly urge him on to the proper life. All who have handled many patients together know the great assistance which is obtained from the rivalry between them in taking the cure faithfully, the brace to a weak will of the example of others, the encouragement to the discouraged from the good results in other cases and the mutual assistance of that spirit which animates them all.

True, the single patient is free from the depressing effects of that curse of the pulmonary invalid, symptom-talking, but this is more than counterbalanced by the tendency of the lonely patient to brood over his own troubles and to introspect. The only way in which I have been able to get around this difficulty has been, wherever possible, to place a number of patients together in a properly managed house rather than each in his own house. In such houses they get the benefit of example, etc., though free from the institutional atmosphere which is so distasteful to most American patients, and the brightness and cheerfulness of these houses, if the inmates are properly chosen, is a very great help in the treatment. Therefore, whether in our cities or in resorts, I believe that wherever possible we should try to place our patients together. Unless they will give it a trial, however, it is often hard to convince people that such association with others will not be depressing and dismal; though if we are very careful to place incipient cases only with the incipient and the advanced with the advanced, so as to avoid the discouraging effect which their difference of condition can have on the patients, the fact is just the contrary, such houses being unusually cheerful and bright. It need hardly be noted that the doctor must also display tact in sizing up differences of social condition in his cases, as by placing together patients too widely separated in this way there is pretty sure to be friction, dissatisfaction and trouble.

If the patient must be handled alone in his own house, as will usually be necessary in our cities, or with those who are too fastidious to mix with others whom they consider less elegant than themselves, the difficulty arising from the lack of example can be overcome only by redoubled efforts and more careful teaching on the part of the physician, and by more self-control and intelligence on the part of the patient.

As the result of these considerations I believe that it is evident that, save for the beneficial influence of ex-

ample and of climate, all the conditions obtained in sanatoria can be secured for patients outside of such institutions. I would here, however, make an exception of our very poorest classes and of our criminal poor. For these, owing to conditions not controllable by the doctor, there seems little hope unless our sociologists and philanthropists step in and change or improve for them those surroundings and habits under which they live and which lie at the root of their sickness. For them the treatment of tuberculosis is primarily a sociologic problem, and the doctor's part in it, however important, is necessarily secondary to that of the civic and social reformer.

Of course, in applying sanatorium methods, as they have been called, the physician who is used to the treatment chiefly of acute diseases will find considerable trouble, for the former demands far more detail work than the latter, and most doctors find it hard to keep alive their interest in a case after the acute symptoms subside and the changes, instead of being visible from day to day or from hour to hour, are to be discovered only from month to month or at even longer intervals.

It is unquestionably troublesome to have to adjust every small detail of the patient's life, and to fill to some degree the functions of the nurse as well as the doctor, and it is to be feared that the majority of practitioners will therefore always find the treatment of tuberculosis tiresome and unsatisfactory; but it is only by such work that we can expect to get good results.

THE PSYCHIC HANDLING OF THE PATIENT

Turning our attention now to the application of these methods in the home treatment of tuberculosis, it is evident that, since a patient has not merely a body but a mind and a soul, there are two distinct aspects in which this treatment can be regarded, the physical and the psychical; the former concerned with the arrangement of the details of the patient's life and surroundings, the nature of his exercise and rest, his dietary, amusements, occupations, etc.; the latter dealing with his mental capacity and his attitude toward his sickness, his spirit, courage and will, and his relation to his physician. The physical part of the treatment is, of the two, the least difficult to carry out and is more generally understood. I have, moreover, very fully treated of it elsewhere,[2] as have many others, and it is to-day familiar to all, so that it would be superfluous here to consider its various details. The psychic side of the treatment is much less fully understood and more frequently neglected; it is the part which will give us the most trouble when we treat patients outside of sanatoria, yet it is essential to the success of the treatment. Hence I shall here confine myself to a consideration of it alone.

It may be approached from two points of view, the one relating to the patient, the other to the doctor, and I shall here dwell on the qualities which each will need if the home treatment is to be as successful as that in a sanatorium.

The qualities needed by the patient are, in the order of their importance, (1) will power and determination; (2) earnestness and purposefulness; (3) cheerfulness and patience, and (4) intelligence and interest.

1. Of these, will power and determination are unquestionably the first; in their absence the lightest case becomes severe, while with them even a desperate one may have hope. When I speak of will power I refer not merely, or chiefly, to that more ordinary type of will which is able to impose its wishes on others, but more especially to that higher type which can turn its will inward and conquer itself, which can force itself to the difficult denial of pleasure for profit, which can obey tedious orders strictly and closely, and which can compel cheerfulness when all around seems dark. When the patient possesses such a will his physician is, indeed, fortunate; but the doctor should never forget that, even when it is more or less poorly developed, it is in the physician's power to cultivate it, and that he can arouse and enlarge a dormant or ill-applied will and direct it into right channels, and this cultivation of the will in a wise direction is one of the doctor's most important and inspiring duties. What more splendid than to awaken will where before it was latent, interest where there was apathy, purposefulness where there was vacillation, and thus to bring victory out of a case that otherwise would be hopeless? We are not seldom made to realize, however, that if the moral backbone of the patient be below a certain level, such induced will and earnestness will exist only as long as the patient keeps in touch with his source of power, and that if this is removed he will relapse into his original weakness and spinelessness. Such patients, whatever their physical condition, are hopeless, this being a good example of the survival of the fittest; fortunately, however, they are few.

2. Next to will and determination I would place earnestness and purposefulness. The light-minded patient, incapable of following a fixed aim persistently, who can never frankly face the facts, who is never in earnest about anything, and who lacks any comprehension of a serious purpose in life, is a difficult problem for the doctor, for such qualities are not easily developed where they are lacking. It has often seemed to me especially difficult to develop earnestness in young girls or in unusually attractive women accustomed to much attention, for too many of them in these days look on life merely as a playground in which to amuse themselves, and can not be brought to regard it as a field for noble, if arduous, work.

3. Cheerfulness is an invaluable quality, while not essential, for many earnest and excellent patients seem to lack it constitutionally, but it can be cultivated to a great extent by the will. The patient who is grateful for every smallest gain and does not magnify every loss; who picks out each speck of sunshine to enjoy and tries to shut his eyes to the dark places; who goes into the fight not whining and believing he will be beaten, but bravely and hopeful of victory, has already taken a big step toward recovery. It is often inspiring to the physician to see how a patient will labor for cheerfulness and for a sunny point of view when his doctor knows so well how many causes he has for discouragement and despondency. Such people are a blessing to the households in which they live and serve as a source of sunshine to all around them. In this connection it should be noted that the families and friends of our patients should be taught and compelled to keep from them all those sad and depressing occurrences which they seem to take such a pleasure in recounting to the sick ones, either by letter or by word of mouth, thus needlessly and harmfully depressing them, the stupidity of people on this score being sometimes beyond comprehension.

Patience, in a disease which runs so slow a course as pulmonary tuberculosis, is most important, and he who

2. New York Med. Jour., January, 1899; December and January, 1902; Ztschr. f. Tuberk., 1902, vi, No. 6.

can quietly and patiently live each day as it comes, uncomplaining and unfretting, will be a comfort to his doctor and a help to himself.

4. All authors dwell on the importance of intelligence in a patient; it is of scarcely less weight than the qualities already dwelt on, and, is, indeed, almost inseparable from some of them. There are few things harder for the doctor than to sit opposite a patient whom he is trying to interest and instruct in his own case, and to be unable to awaken one ray of intelligence, comprehension or interest in his dull, impassive eyes, or to make clear to him the simplest details of his treatment. Such patients can not be made to grasp the principles of their cure properly or to take that live interest in it which is so important; they not only obtain poor results for themselves but are a dead weight on their physician. On the other hand, the intelligent, wide-awake patient who, even if uneducated, responds to efforts in his behalf by a prompt comprehension and cooperation, who grasps the physician's aims and helps to further them, is not merely doing much to assure his own recovery, but inexpressibly lightens the doctor's work.

This lack of intelligence in the patient is one of the severest handicaps on our tuberculosis dispensaries and classes, when, as is so often the case, their clientele is drawn chiefly from the ignorant foreigners who crowd some sections of our cities and whom it seems impossible to awaken to any understanding of hygienic living or to teach how they must conduct themselves.

In private practice the intelligence of the patient is more usually sufficient, but even here the results are infinitely improved, other things being equal, when the mind is alert and keen.

If the patient is by nature enthusiastic it will be of great assistance in our efforts in his behalf, but enthusiasm is one of those qualities which is born in a man and which can not be cultivated.

SOCIAL AND FINANCIAL CONDITIONS

Aside from these mental qualities, we should note two conditions which have great effect on the patient's prospects of recovery, i. e., his social position and his finances.

In regard to the former, as is true all through life, the best lies at neither extreme of the social ladder. The very rich, fastidious patient of the upper ten, who has been spoilt all his life, who has always had his own way, who can not adapt himself to new conditions or be happy unless he can surround himself with all his accustomed luxuries, and who is unwilling, even when his life is at stake, to give up his favorite indulgences or bend his will to that of another, is handicapped in very much the same way, though from a different cause, as is the poor man who, for want of intelligence or means, can not get the proper conditions. The best results can be expected from those having more normal social ideals, cultivated and intelligent but not too much bitten by the society bee. These, neither handicapped by too great a fastidiousness on the one hand, nor on the other by a lack of those qualities which the lower classes miss, will prove our most satisfactory patients. In this class are apt to be professional and scientific men, college professors, and business men, etc., whose pockets, it is true, may not be as well filled as their heads, but who yet have sufficient means to secure proper conditions and whose minds are so trained as to enable them to avail themselves of all their opportunities.

A person's education and his hygienic enlightenment are apt to be, up to a certain level, fairly proportionate to his social station, hence those below a certain class make poor patients, owing to their inability to put into practice customs and habits alien to all their past training.

Many men of the intelligent artisan class, however, make excellent patients, for in this country that class contains many with minds used to independent thought. Though such patients are hampered by narrow means, they can yet obtain good results by making use of roofs, porches or back yards, as Pratt has demonstrated, and he has thus restored many such to a partial or complete working efficiency.

If, however, the disease in this class of patients is to be successfully combated a crusade against the hygienic condition of the average American workshop and the filthy spitting habits of the average American workman will have to be begun. At present thousands of this class yearly fall a prey either to the cupidity of short-sighted employers or to the careless habits of tuberculous fellow workmen.

Patients who are below a certain social level, who can neither secure the proper conditions however simple, nor appreciate them even if obtained, such as our slum dwellers and our criminal classes, must be handled, as already noted, by the community in charitable institutions, and should, if possible, never return to city life, where they at once gravitate back to their slums and their vices, and by the rapidity of their relapses scarcely justify the money paid for their care.

The financial condition of the patient is, of course, of the greatest importance, but in these material days this is too self-evident to need much notice. I would only say that patients must be able to spend on board, lodging and incidentals a minimum of $10 or $15 a week if they are to get proper if simple conditions, while for the artisan class $5.00 a week may possibly suffice. Below this point they become proper subjects for public help.

RELATION OF DOCTOR AND PATIENT

If the doctor is to manage his patient successfully, proper relations with him must be established in the beginning; therefore the first interview is unusually important. At this time the patient must be made to realize fully what he has to fight and the mental as well as the physical means with which he is to fight it, and must be shown the necessity of cultivating those qualities on which I have just dwelt. The absolute necessity of his willing and intelligent cooperation with us should be made clear, as well as the impossibility of getting satisfactory results unless he is willing to be obedient and faithful.

If he is rightly handled in this first interview, which should follow his examination, his confidence in the physician's understanding of his case and interest in his welfare will very largely guarantee his obedience. In this first examination and talk the exact details of the life which he must lead should be laid out for him specifically and clearly, so that there can be no misunderstanding.

Thereafter each time he is seen there should be a close and careful inquiry into his daily life, by means of his record-book and by independent questioning, when errors can be corrected, faithfulness encouraged, and the thorough carrying out of our orders seen to. Thus handled, very few will disobey, but if any do so

systematically it is much better to give them up, for the doctor need not delude himself into supposing that a patient who three times disobeys specific orders will stop there, and he should not risk his reputation in the hands of a strong-headed, stupid or dishonest patient. If patients are followed up in this way there is no difficulty in keeping in close touch with them and controlling their lives most thoroughly, and guiding their slow progress toward recovery will never be tedious, but on the contrary will prove absorbingly interesting not only to the patient but to the doctor.

QUALITIES NEEDED IN THE PHYSICIAN

Not every doctor is so constituted as successfully to handle tuberculous patients. To do so demands certain qualities which are not so necessary to the doctor treating acute diseases, and he who may be pre-eminently successful in treating pneumonia, typhoid, measles, etc., may fail when he undertakes the management of so long drawn out a disease as pulmonary tuberculosis.

1. *Personality.*—All writers on the subject have dwelt on the importance in the physician in this sort of work of that indefinable quality which is called "personality." From the doctor will often have to come the will, the interest, the cheerfulness and the enthusiasm which his patients need. He must be able to charge them with these qualities as an electric current charges a storage battery, and it will need a strong personality and a large supply of vitality to enable him to fill this rôle.

2. *Will.*—For one who is called on to control others it need scarcely be noted that a strong will and forcefulness are desirable so as to compel obedience if need be; but the doctor's discipline should be as little in evidence as possible, and he should be able so to convince his charge of his interest in the latter's welfare, and so make plain to him the reasons for his orders that he will be obeyed not merely, or chiefly, because the patient fears to disobey, but rather from choice and trust.

3. *Teaching Ability.*—Since apparent recovery from tuberculosis demands a thoroughly trained and instructed patient who can be relied on thereafter to live wisely and avoid harmful influences, the doctor must have teaching ability, and not merely show his patient what he must do, but fix it in his memory by giving him reasons why he must do it, for no principle of pedagogy is better established than that the teaching which gives no reasons for the facts it imparts is lifeless and will soon be forgotten.

The doctor must be able to interest the patient in what he teaches him and hence must put it in an attractive form, for however beautiful naked truth may be, it is unquestionable that the clothing in which she is presented to us can greatly enhance or detract from her charms.

Further, if what the patient learns is to stay with him the rest of his life and keep him from imprudence in the future, it must impress him deeply; and we should never forget that he who recovers without having been taught how to retain his recovered health is pretty sure to relapse.

4. *Enthusiasm and Interest.*—If, by good fortune, the doctor is an enthusiast it will serve to lighten his labor, to turn what otherwise might be work into play, and to increase the interest which he can take in his cases. To be able to feel a lively interest in his patients, not merely as cases but as human beings, is a great assistance to the physician.

A small minority of the physician's charges are so unfortunately constituted that it is almost impossible for him to interest or be interested in them. These are a constant drag on the doctor and drain him of his vitality; for such he can usually do but little. The large majority, even if not unusually interesting at first sight, will prove so if studied closely enough, while a small but blessed minority are possessed of such a personality that they interest the physician from the first moment, and by their intelligent comprehension and cooperation make his treatment of them a pleasure throughout.

The importance of detailed work on the physician's part has been sufficiently dwelt on, and I can only repeat that vague, general directions are useless and that the closest specification of our wishes is essential.

Much more could be written on this question of the bearing of the qualities of the patient and his physician on the success or failure of the home treatment of pulmonary tuberculosis, but necessary limitations restrain me, and I can only hope that what I have said may make plain the importance of the mental control of our tuberculous patients.

In closing, let me urge on the general practitioner, to whom these cases first come, not to regard them as hopeless or to treat them routinely, or to relegate them to that category which he may, indeed, have to treat, but in whom there is no outlook or interest, but always to remember that, if only they are recognized as early as modern diagnostic methods permit and handled in the way I have suggested, the large majority will prove hopeful and interesting.

Let them be looked on and studied not merely as cases but as individuals with a personality that will repay study, with qualities which it is in our power to modify for their benefit, and who should appeal deeply to the profession as in their helplessness they come to us for help.

Thus regarded and thus handled, the treatment of our patients outside of closed sanatoria will reward us with unexpected results and remove from the minds of the profession the false, but painfully prevalent idea, inherited from the days when a really early diagnosis was impossible, of the incurability of pulmonary tuberculosis.

61 North French Broad Avenue.

SYSTEM IN RECORDING CASES *

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One can find in medical literature a great many sentences and paragraphs, an occasional page and a few isolated articles dealing with the subject of case records, but there is very little which offers to the student and practitioner a plan by which he may make records in an orderly and systematic way and at the same time preserve them for ready reference. There is no difference of opinion as to the value of such records. All seem to be agreed that it is impossible to arrive at a full and correct understanding of our cases without the systematic study incident to making records of the cases as they come before us from day to day.

* Because of lack of space, this article here appears in abbreviated form. The complete article, including the full scheme of classification and details in regard to its application, may be obtained in the author's reprints, a copy of which will be sent by THE JOURNAL on receipt of a two-cent stamp.

It has long been the custom to keep records in large hospitals, and the greater part of the statistical basis for our discussions is from hospital records. It has recently been truly said by one of our American teachers, "There is no doubt that our present statistics are drawn too much from hospital work and that some valuable points might be developed were our private records as available as those concerning patients treated in the hospital."

It seems almost superfluous to enumerate the reasons for keeping case records in private practice as well as in hospital work. A comparison between private patients and hospital patients shows considerable difference in them in several important ways. Patients are not usually admitted to the hospital wards until they are seriously ill. A large proportion of such serious illness is due to the oversight or neglect of conditions which would have been easily cured if they had been observed early. For this reason the ward of the hospital presents some conditions which are rarely met in private practice and is a comparatively poor place to study initial symptoms of disease. This is better done in private practice. Disease is modified by the environment of the patient, and it is only by observing a large number of patients of similar environment that we can fully understand all the symptoms presented. To know a disease in its entirety we must have opportunity to make systematic study of it under varying conditions.

Those members of the profession who write understand fully the value of case records; but the importance of such records is not so plain to the great body of practitioners, who are inclined to say that they have no time for taking case records and no use for them if they are made. Case records are not kept solely for the purpose of teaching and writing, but should be kept for systematic and orderly study of the serious daily work of the general practitioner. There is an important work of observation and record-making remaining to be done by the physician in the country and in the small towns. Each environment develops its own modifications, which should be carefully studied and recorded. These practitioners are neglecting a duty which they owe to the sick as well as to their profession. The field of medicine has become too large and the plans of treatment too varied for any man to carry all in his head. Each one should have a plan by which he can easily review, for the purpose of comparison, all of the cases which he has had of a given kind. This is particularly true of the family practitioner, and yet he is the one who is least inclined to record his observations. The general practitioner sees such a variety of cases during the year that, in order to do his best in understanding each case, he should be able to review the similar ones which he has previously had. If railroad companies, insurance companies, lodges, associations and corporations find minute records of their members or employés so valuable, are not such records equally valuable to the practitioner of medicine who is devoting his whole life to that business?

THE ESSENTIAL REQUIREMENTS OF A CASE-RECORD SYSTEM

There is a demand in the profession for some plan of case record which will be portable, brief, orderly and systematic. One reason why so few men keep records of their cases is that they have never been presented with a well-digested plan by which such records can be kept and made accessible for immediate reference. There are few physicians who have not at some time in their careers tried to keep records of their cases, but after a few months or years have abandoned record-keeping. Why is this true? Usually because the plan which they adopted was unpractical. Suppose a physician should keep records of cases until he has accumulated a large number. Perhaps he has made histories of 500 cases of one particular disease, extending through many years and contained, with hundreds of other cases, in books, drawers or boxes, according to the plan used. To make use of these cases, even for the preparation of a paper, he is confronted with the formidable task of going over his whole list in order to pick out those of the particular disease in which he is at that moment interested. Consequently many men who have recorded cases for years have no practical way in which to make daily use of their records. The object of this paper is to describe a method which seems to have in it the essentials of an orderly and systematic plan by which records made at the bedside or in the office are available for reference at any time without search through a large accumulation of records on other subjects than the one desired.

There are several essentials in making case records. Such records must be made by the doctor himself, and for this reason the plan adopted must be portable and convenient in order that he may always have with him the material on which the record is to be written. The record must be concise, and printed outlines may be used, although there is considerable difference of opinion as to the value of such outlines. With the average man records will be better taken and more orderly and more useful for future reference if outlines are used. Any plan to be successful must be practical and available for every-day use, at the bedside, at the office, at the hospital or on the street. In the plan presented the size of the card is not material, but I use a 3x5 card because it can be readily carried in any pocket and is not bulky. Only the number of cards necessary for one day need be carried. It is the size used in all libraries and was adopted by the American Library Association after long discussion. The only disadvantage which can be urged against this card is that it is too small for the amount of information which should be recorded and necessitates several cards and rewriting the patient's name on each. The first difficulty is obviated by multiplying the number of cards, which one will find a real convenience as it allows the various parts of the examination to be separated. This, combined with portability and convenience, overcomes the second objection. Only one size of card should be used. It is a great mistake to have one size for one purpose and another for other purposes. As one's work develops various combinations and readjustments will be found desirable and can readily be made if the cards are all of one size.

In the plan presented the business account is taken care of incidentally on the record card, but this is a matter of individual preference and the account can be kept entirely separate either in books or on other cards. This provision was adopted because it saved rewriting the patient's name and address. It has been the constant aim to reduce duplicating to the minimum and yet preserve the essentials. The plan adopted should eliminate the necessity for copying or making notes which are later to be written out in full. The original record should consist of orderly notes taken in a form ready for filing at the time of making the observation.

The one point on which many plans have failed is that of portability. In the enthusiasm of the moment the beginner will overlook or ignore this point and later find his work interrupted and finally ruined and abandoned because his card, sheet or book is not of such dimensions as to make it convenient for constant carrying in the pocket without being too bulky and cumbersome. Too much stress can not be laid on this point, which to the beginner often appears insignificant. The average man begins his record-taking when his time is not all occupied. In a few years he finds himself more and more busy and his time has a real market value which he must economize carefully. A busy day, a busy week and a busy month will go by with no records taken because the system pursued required more time than it was possible for him to give to it. Often a more portable and convenient plan would have saved the day. Many fail because they record too minutely in the beginning and are unable to keep it up. Records should deal with essentials and all unimportant details should be scrupulously avoided. Above all documents, a case record should be brief and to the point. It should be cleared of all that is superfluous in both words and matter, if it is to be continued year after year in a systematic and useful way.

There are various objects to be attained by taking records, and the form and the extent will vary greatly with the purpose of the observer. This paper is written from the standpoint of the practical working physician who needs his records for two principal purposes: first, to improve his method and character of observation; second, to preserve these observations for ready reference.

Many succeed as to the first, but the great majority fail with the second. It is believed that the plan herein presented provides a convenient and concise method with full provision for elasticity and completeness. It comprises two distinct parts, an alphabetical file under the name of the patient, and a classified list of cases under the diagnosis or probable diagnosis.

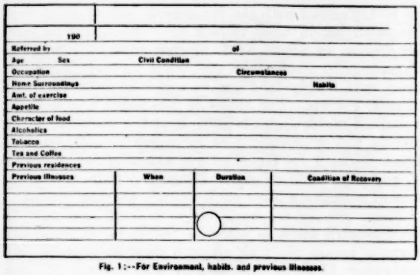


Fig. 1:—For Environment, habits, and previous illnesses.

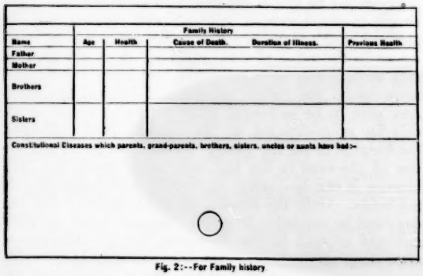


Fig. 2:—For Family history.

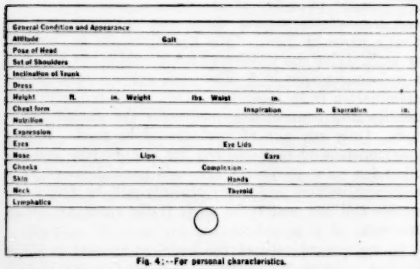


Fig. 4:—For personal characteristics.

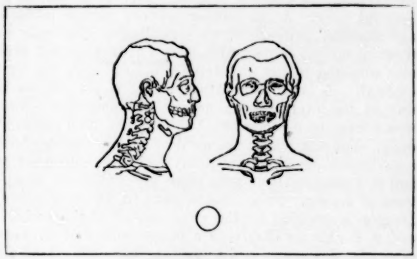


Fig. 7.

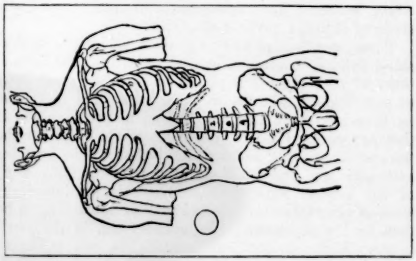


Fig. 8.

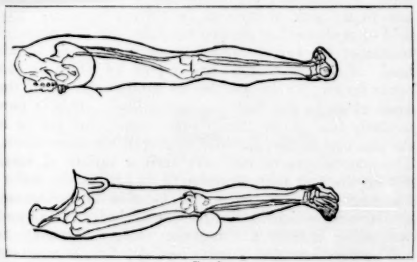
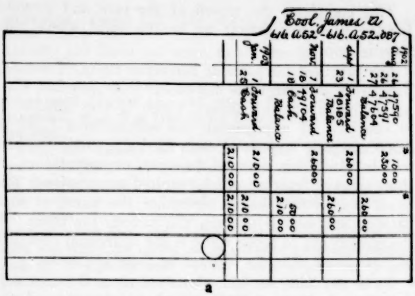
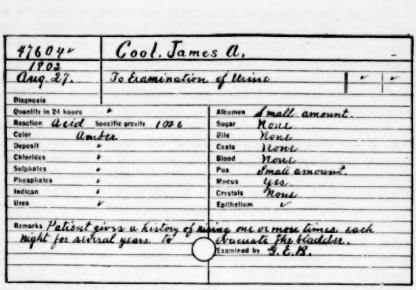
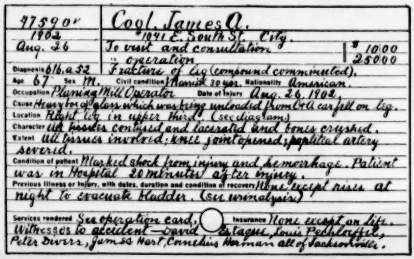
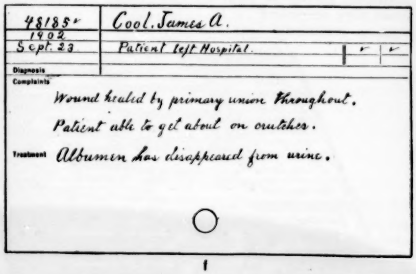


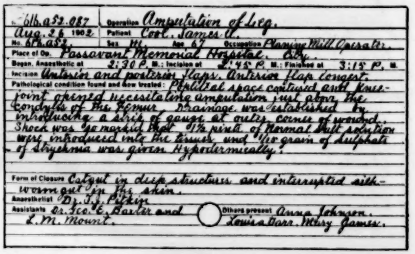
Fig. 9.

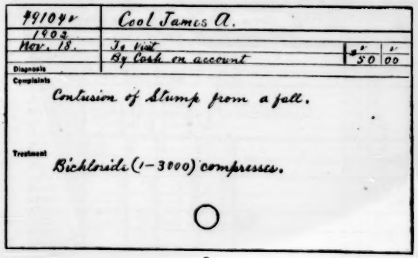


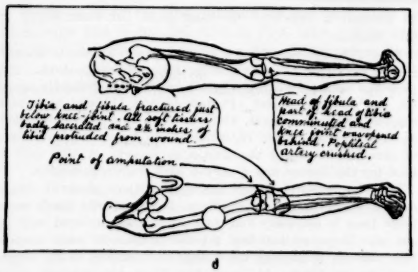



47390
Cool. James A.
1902
Aug. 26
1041 E. South St. City.
To visit and consultation
" operation
$ 10.00
25.00
Diagnosis 6/6.a.52 Fracture of Leg (compound comminuted).
Age 67 Sex M. Civil condition Married 20 yrs. Nationality American.
Occupation Planing Mill Operator Date of Injury Aug. 26. 1902.
Cause Heavy log of timber which was being unloaded from R.R. car fell on leg.
Location Right leg in upper third. (see diagrams)
Character All bones comprised and lacerated and tissues crushed.
Extent All tissues lacerated; knee joint opened, popliteal artery severed.
Condition of patient Much shock from injury and hemorrhage. Patient was in Hospital 20 minutes after injury.
Previous illness or injury, with dates, duration and condition of recovery None except rises at night to evacuate bladder. (see reverse pages)
Services rendered See operation card.
Insurance None except on life.
Witnesses to accident—David Teague, Louis Pechtoffel, Peter Divers, James Hart, Cornelius Hartman all of Sackerville.
b




6/6.a52.087
Operation Amputation of Leg.
Aug. 26. 1902.
Patient Cool. James A.
No. 24 Ward
Sex M. Age 67
Occupation Planing Mill Operator.
Place of Op. Passavant Memorial Hospital. City.
Began. Anaesthetic at 2:30 P. M.; Incision at 2:45 P. M.; Finished at 3:15 P. M.
Incision Anterior and posterior flaps. Anterior flap compact.
Pathological condition found and how treated Popliteal space contused and knee-joint opened necessitating amputation just above the condyles of the femur. Drainage was established by introducing a strip of gauze at outer corner of wound. Sheet was then applied. 10% sol. of Mercuric Chlor. solution was injected into the tissues and 1/2 grain of sulphate of Strychnia was given Hypodermically.
Form of Closure Catgut in deep structures and interrupted silk-worm gut for the skin.
Anaesthetist Dr. J. J. Pilson
Assistants Dr. Ice E. Carter and L. M. Mount.
Others present Anna Johnson, Louise Starr, Mary James.
c




Tibia and fibula fractured just below knee-joint. All soft tissues badly lacerated and 25 inches of tibia protruded from wound.
Point of amputation.
Head of fibula and part of head of tibia comminuted and knee joint wounded behind. Popliteal artery crushed.
d

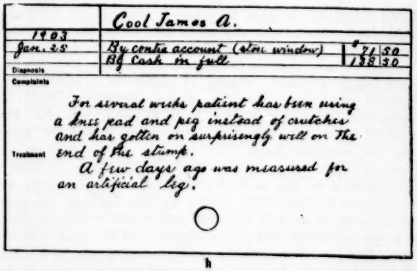

Cool James A.
1903
Jan. 25
By contra account (Con. window)
" Cash in full
71 50
138 50
Diagnosis
Complaints
In several weeks patient has been using a knee pad and peg instead of crutches and has gotten on surprisingly well on the end of the stump.
Treatment
A few days ago was measured for an artificial leg.
h

Fig. 10.—Cards illustrating the elements of a case record, with account.

The complete paper contains twelve illustrations of card forms and a completed record of a case, with full description of the various forms which I have used for a number of years, and which have been fairly satisfactory. The forms and the size of the card can be varied without interfering in the least with the system of records illustrated.

From day to day, in the office, at the hospital, or at the bedside, the record is written on cards such as those shown in Figures 1, 2 and 4, which are filed in chronological order under the patient's name.

For the convenience of those who are called in cases of accident and who subsequently make out reports to railroad companies, or accident insurance companies, the card shown in Figure 10 b provides for the data necessary for these purposes, although a blank card may be required for elaborating one or more points. I have used this form for a number of years and rarely find more cards necessary. In accident cases as well as cases of disease, diagrams as illustrated in Figures 7 to 9 are stamped on the back of the card, and the description on the diagram supplements the record as to the location and extent of the disease or injury. The diagrams illustrated, Figures 7 to 9, are made with rubber stamps. These stamps are from Keen's charts, are eight in number and provide for every part of the body. For those in special lines of work other outlines will be found desirable, as, for example, the pelvis, the abdominal contents, the larynx, etc. A few words describing a diagram will be clearer than a whole page of written description alone. They save time in recording and contribute greatly to accuracy. The rubber stamps will be found very convenient.

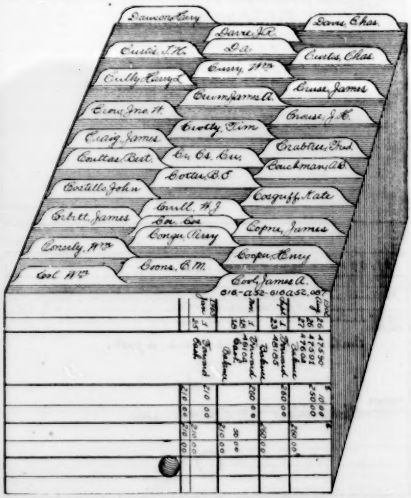


Fig. 11.—Records filed alphabetically by patients' names.

To illustrate the plan in practical use we will suppose a man injured in such a way as to necessitate the amputation of the leg. Figure 10 is a reproduction of the whole record in such a case, showing its history and result, with the day and ledger accounts. Figure 11 illustrates a section of a drawer containing a number of case histories. While the same case is shown in Figures 11 to 12 as in Figure 10. Figure 12 shows the narrative form, while Figure 10 shows the diagrammatic form. The selection of the form is entirely a matter of personal preference. In Figure 10 Card *d* as shown is on the back of Card *c*. Card *d* gives both anterior and posterior view of the leg and indicates the point of amputation as well as point and extent of injury. Card *e* is the urinalysis card. In explanation of the number at the upper left hand corner of the record card (See No. 47590, Fig. 10 b), which are also used as case numbers, it should be explained that I use a journal in which all entries appear in chronological order. This is not an essential part of the plan, although it is a great convenience to the bookkeeper. Cards *g* and *h* were made at dates widely apart and show how the account was finally closed and also contain notations as to the patient's condition at those dates.

This completes the record of the case and provides for the necessary details up to the point where most records stop.

For practical purposes of reference study, if we stop here, we will make little use of our case records. They are so much ancient history which is very difficult to to consult. If a physician has accumulated 1,000 or 5,000 complete records of cases filed alphabetically, how will he study his cases of fracture, or amputation, or those cases of fracture which required amputation? The usual plan would be to remember the name of such patients and search through the records for them. If the records are in books there is the additional difficulty of consulting as many indexes as there are books.

To be available for immediate reference it is not sufficient to have records filed under the names of the patients; they must also be filed under the titles of the disease or injury. It is the chief object of this paper to present a practical working plan for such filing of our records.

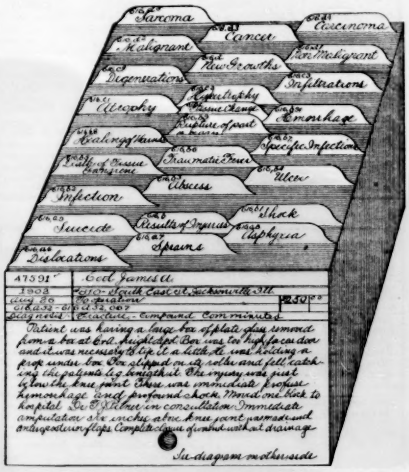


Fig. 12.—Records filed in classified index of diseases and injuries.

More than ten years ago I adopted Dewey's decimal classification, and since have used it for filing all case records. The plan has been to file the original record alphabetically under the name of the patient (Figures 10 and 11) and to have a copy of the record made which is filed in a classified index, as illustrated in Figure 12, which shows a section of a drawer of records filed under the disease or injury. A blue card is used for the disease and a salmon card for the operation.

The plan which I use of having the record made in duplicate is complete and satisfactory, but it entails much more labor than is necessary and, in fact, can be employed only by one who keeps an assistant for this work. A much simpler plan consists in posting the charges for services to the ledger card, as in Figure 11, and then filing the original cards under the diagnosis as in Figure 12. The classification numbers (616.a52, Fracture—Compound Comminuted and 616.a52. 087, Operation for Compound Comminuted Fracture) on the original record (Figure 12) and on the ledger card (Figure 11) are cross-references and show at once where the original records are filed in the classified list of diseases, injuries and

operations (Figure 12). The ledger card contains the class under which the case record was filed (Figure 11. No. 616.a52) and shows just where to look for the original record. (Figure 12.)

In practical use the original record cards are filed with the ledger card (Figure 11) and remain there until the case is completed, when it is transferred to the classified cases (Figure 12).

After the account is paid the ledger cards are transferred and become an alphabetical index by patients' names to the records.

By either plan the records are classified at once and all records of each disease or injury are found together, are kept up to date, and are immediately accessible for reference, and study and enable one to compare symptoms, methods, findings, treatments and results. Such a plan is of great practical value for both the clinician and the writer of articles and books by enabling them to consult the records of any case or group of cases without the necessity of a tiresome search.

The most important thing connected with this plan was the working out of a few modifications of the Dewey decimal classification. This classification consists of two parts: first, a division of all knowledge arranged in ten classes, each class being assigned one hundred numbers; second, a relative index. An outline of the classification is as follows:

000 General Works.
100 Philosophy.
200 Religion.
300 Sociology.
400 Philology.
500 Natural Science.
600 Useful Arts.
700 Fine Arts.
800 Literature.
900 History.

Each of these classes is subdivided into ten divisions, one of which, the subdivision of 600, Useful Arts, will illustrate the system:

610 Medicine.
620 Engineering.
630 Agriculture.
640 Domestic Economy.
650 Communication, Commerce.
660 Chemical Technology.
670 Manufacture.
680 Mechanic Trades.
690 Building.

Medicine is in the first division of the sixth class of knowledge and is number 610 in that class. Wherever 610 to 619 inclusive appear in the classification they indicate that the subjects are medical. Medicine (610) is separated into ten subdivisions, as follows:

610 General Works.
611 Anatomy.
612 Physiology.
613 Personal Hygiene.
614 Public Health.
615 Materia Medica and Therapeutics.
616 Pathology, Diseases and Injuries, Treatment.
617 Surgery.
618 Diseases of Women and Children.
619 Comparative Medicine, Veterinary.

In working out the subsections of each of the ten subdivisions of medicine, decimals are used.

The following comprise the general headings of the subsections as given in the complete paper and illustrate the plan of the classification:[1]

1. Surgery and surgical treatment are included under the region of the disease.

OUTLINE OF CLASSIFICATION OF MEDICINE

616	*PATHOLOGY, DISEASES AND INJURIES, TREATMENT.*
616.a	INJURIES
616.b	RESULTS OF INJURIES. SURGICAL PATHOLOGY
616.c	TISSUE CHANGES
616.d	NEW GROWTHS
616.e	FOREIGN BODIES
616.f	NERVE DISTURBANCES
616.g	SPECIAL INFECTIONS
616.h	FUNCTIONAL DISTURBANCES
616.k	ANOMALIES
616.08	TREATMENT
616.081	CLIMATIC
616.082	HYGIENIC
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Clinical Notes

CLINICAL OBSERVATIONS ON BLOOD STAINS

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The object of this paper is to call attention to some of the chemistry of the methyl alcohol stains in common use for the staining of blood, and to point out the practical value of the study to the general practitioner who makes his own blood examinations.

Since Wright's modification is that in most common use, the discussion will be confined to it in the first part of the paper, though the remarks apply equally well to the Hastings modification and to the Harlow stain, which will be taken up in some detail later.

None of the polychrome methylene blue and eosin mixtures are stable. They are mixtures of polychrome methylene blue, which is both neutrophilic and basophilic, and of eosin, an oxyphilic stain. The specificity of the stain depends alone on the balanced combination of these two components, and this, in turn, depends on the reaction. Methyl alcohol is used for the solvent in all of these staining fluids, this chiefly for its fixing properties.

Methyl alcohol is of itself unstable. In the presence of but little light or air, it is in part changed to formaldehyd, and this, with a bit of moisture is converted into formic acid. It makes some difference what methyl alcohol one uses. The "absolute methyl alcohol, acetone-free," is not so good for making up a staining solution as is the "reagent methyl alcohol" to be had from Merck. Absolute methyl alcohol readily changes in part to formaldehyd and formic acid even in the absence of any amount of light, air or moisture; whereas the "reagent" alcohol is far more stable.

It has been the ordinary experience of every one who has had much blood work to do, that an old stain always stains too red; this, for the reason pointed out above, that the old staining mixture becomes acid. In the presence of a trace of acid the oxyphilic component of the stain is accentuated, while the avidity of the methylene blue is depressed and *vice versa*. Again, different bloods react differently to the same staining fluid under the very same technic. A normal blood, for instance, will stain very well with a certain staining solution, while a smear from pernicious anemia will not stain at all well, or it may be impossible to demonstrate the granules of the myelocytes in a case of myelogenous leukemia.

In Professor Dock's clinic at the University of Michigan, in 1906, the first work, to my knowledge, on the reaction and titration of these stains was done. At that time there were six cases of pernicious anemia in the clinic and three of myelogenous leukemia. Not one of these bloods would stain satisfactorily with the staining fluid (Wright's) that we used with most satisfactory results on fairly normal bloods. As a result of this experience, it was determined to discover, if possible, the cause. Reasoning from the chemistry of methyl alcohol, it was decided to alter the reaction of the stain and see if in that way good stains might not be had.

A little potassium hydrate by alcohol was dissolved in a few cubic centimeters of methyl alcohol in a test-tube, and to another few cubic centimeters of methyl alcohol a few drops of glacial acetic acid were added. Note that in this procedure no water was introduced. If the staining fluid to be altered did not stain the basophilic elements and the neutrophilic granules of the polymorphonuclear leucocytes well, a few drops of the potassium hydrate solution in alcohol was added to the staining solution. The bottle was then shaken, and, after thorough mixing, a blood smear was stained. If the stained smear was not satisfactory, for instance, if the neutrophilic granules did not come up well, a few more drops were added, and the procedure repeated until the neutrophilic granules did come up as desired. If too much alkali were added to the staining fluid, as evidenced by poorly defined oxyphilic elements and undue accentuation of the blue, a little of the acid in alcohol was added, and the whole titrated back as described above. A stain may be considered satisfactory if the neutrophilic granules of the polymorphonuclear leucocytes stain well. In a myelogenous leukemia smear, the best criterion is the neutrophilic myelocyte. The granules must be clearly defined and of good color. By this procedure good stains may always be had from any staining fluid on any blood.

The staining fluid was then put into a clean dark bottle and a good cork fitted tightly. A dark bottle with a good cork is in every way to be preferred to a bottle with a glass stopper, even though the glass be amber. A staining fluid will keep in perfect condition indefinitely if kept in this manner, unless it is allowed to get low in the bottle, so that a large amount of air is admitted. In the latter case, after a time, the same changes will be noted that are to be found in all old staining fluids.

After these experiments were completed, we made up some of the Wright powder. Three batches of the powder were made up, and in only one of them were the directions carefully followed. In one of the batches 15 per cent. more eosin was used than the directions called for, and in the other 20 per cent. more of the methylene blue was used. Solutions of the two powders containing excesses of one of the components were made, and the staining solution titrated as described. We obtained perfect stains from each of these powders—in fact, better stains than could be had from the powder that was accurately made, before it too was titrated.

Staining solutions were then bought from Bausch and Lomb, Eberbach & Company, and from the Leitz Chicago office. None of these staining fluids gave satisfactory stains before manipulation. By titrating we obtained good stains from each.

One batch of Hastings' stain was imperfectly made up, and from this good stains were had after manipulation.

In the fall of 1907 work was started on the Harlow stain. This stain is of two parts, one a 1 per cent. solution of eosin, water soluble, in methyl alcohol, and the other a 1 per cent. solution of ordinary methylene blue, or of Ehrlich's rectified, in methyl alcohol. The smear is stained first for one minute with the eosin mixture, and the stain poured or thrown off. Then the methylene blue solution is put on for one minute, after which it is washed in distilled water, dried and mounted as usual. In the Harlow stain, the methylene blue is polychromed on the smear by the little eosin remaining on the glass after most of it has been poured or thrown off. The stained smear has the same general appearance as the Wright stain, except that the reds have somewhat of a blue tint. An old Harlow stain incurs the same difficul-

ties that does an old Wright stain; it does not stain well the nuclei and the neutrophilic granules. In titrating this stain, both solutions were altered. Changing the reaction of the eosin solution had no effect on the resulting stain. Changing the reaction of the methylene blue solution gave all the good results that were obtained from the manipulation of the Wright stain. The Harlow stain can be as easily and as satisfactorily altered as can the Wright stain to suit any individual blood. The Harlow stain is in some ways to be preferred to the others, in that it stains the granules more decidedly. There is with it never a question as to the nature of a granule. On the other hand, in working with a blood in which there is very slight polychromatophilia it is not so satisfactory.

SUMMARY

1. The changes found in old methylene blue and eosin staining mixtures are due to a change in the reaction of the methyl alcohol.

2. A staining fluid which is too acid will stain too red. The red corpuscles and the granules of the eosinophilic cells stain well enough, but the neutrophilic granules of the polymorphonuclear leucocytes and the nuclei do not stain well.

3. A staining fluid which is too alakaline will stain blue. The nuclear elements stain well, and in a certain number of cases the neutrophilic granules stain fairly well, but the red blood corpuscles do not color properly.

4. All staining fluids made up with methyl alcohol should be kept in clean dark bottles and tightly corked. If the bottle has been thoroughly steamed out and dried before the staining fluid is put into it, much of the difficulty will be avoided. A bottle that has been well coated with a layer of asphaltum paint is best. A good cork is to be preferred to a glass stopper.

5. By titrating with potassium hydrate, or glacial acetic acid, in methyl alcohol, the stain can at any time be brought up to the desired standard or reaction for any blood.

6. The procedure is equally efficacious with Wright's, Hastings' or Harlow's stain.

7. In working the Harlow stain, change the reaction only of the methylene blue.

8. Judge the stained smear, using the neutrophilic granules of the polymorphonuclear leucocytes as your criterion. If these do not stain well, something is wrong with the staining solution or the technic.

9. Use a methyl alcohol of known purity.

LYMPHATIC LEUKEMIA

A CASE TREATED BY THE STENGEL-PANCOAST METHOD

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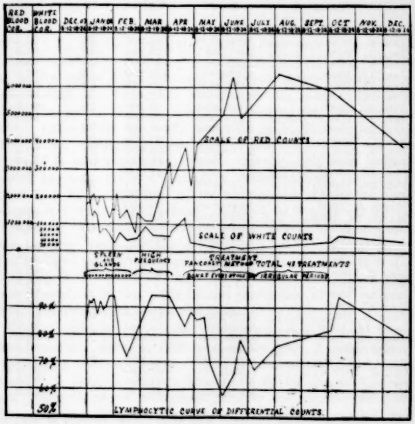
The report of a case of chronic lymphatic leukemia treated by the Roentgen method of Pancoast seems worthy of record, despite the already long list of detailed reports of cases treated by the older technic. Results of Roentgen treatment in leukemia by the older methods have not been satisfactory, as the small percentage of permanent cures testify. The striking initial drop in the leucocyte count and the decrease in size of the spleen and lymph glands has unfortunately not been permanent and the brilliancy of this early symptomatic cure has been replaced by subsequent relapse and failure. Analysis of completed case records[1] shows a fatal result in 85 to 90 per cent.

Manifestly such final result is neither satisfactory nor encouraging, and here and there voices have been raised against the Roentgen ray as having failed of its promised benefit. But, as Stengel and Pancoast point out, an agent capable of such powerful initial changes must have inherent virtues, and they prefer to believe that the hitherto unsatisfactory results were due to irrational and improper methods rather than to deficiencies in *x*-ray possibilities. Assuming the pathologic lesions of leukemia (regardless of type) to be primarily in the bone marrow, the effect of exposing the lymphoid tissue by the older methods was as follows: Lymphocytes or myelocytes were destroyed, liberating at the same time leucolytic substances, which in turn affected the bone marrow. The result desired was, therefore, brought about by an indirect and circuitous



method, instead of by a direct attack on the essential lesion. The spleen was avoided, at least until the patient was improved.

Five cases are reported by Pancoast and Stengel, all of the splenomedullary type, but details are not given. In a personal communication to one of us, Pancoast states that he has also used the method in lymphatic cases. Pancoast and Stengel claim for this method equal or superior final results and the avoidance of toxemia.

Briefly, the new method is to map out the bone marrow of the body into about eight districts or regions and to expose these consecutively and in rotation, repeating until desired results are attained. Certainly nothing seems more rational than attacking a pathologic process direct when this is possible, as it is here. Judgment of the method will, of course, be delayed until sufficient final results can be analyzed, but the unsatisfactory nature of treatment by the older method contains nothing to recommend its continued use when the probability of a better is offered.

1. Stengel, Alfred, and Pancoast, Henry K.: Treatment of Leukemia by the *X*-ray, THE JOURNAL A. M. A., April 25, 1908, L, 1317.

CASE REPORT

Patient.—Male, aged 47, watchman and porter; came under observation in December, 1907; referred by Dr. J. H. Jacobson. The father and mother were dead of unknown causes. The remaining family history presented nothing (in so far as the patient was aware) of interest in connection with the case.

History.—The patient was well as a child and enjoyed fair health during the greater part of his life. An attack of so-called "influenza" at 20 was passed through without complications or sequelæ. Six years ago (the patient being then 41) a slight left-sided facial paralysis occurred, which entirely disappeared at the end of two weeks. Venereal infection was denied. The patient was a moderate user of alcohol and tobacco.

Present Illness.—It is difficult, if not impossible, for a definite onset to be described. The "swelling" of various parts of the body dates back three or four months from the time of first observation, but prior to this there were cough, expectoration and weakness. In December, 1907, there were pronounced weakness, dizzy attacks, hoarseness, stiffness in legs, dyspnea, constipation and nervousness.

TABLE OF BLOOD FINDINGS

Date.	Reds.	Whites.	Hb.	Lympho-cytes. Per cent.	Poly. Neutrop. Per Cent.	Large Mononuclear. Per Cent.	Eosino-phile.	Mast.	Nucleated Reds.
Dec. 30, 1907.....	1,688,000	342,000	25	85.5	10	2.5	1.0	1.0	1
Jan. 3, 1908.....	1,840,000	195,200	24	92.3	7.0	0.3	0.3	0.0	
Jan. 5, 1908.....	2,072,000	128,800	30	91.5	7.0	1.0	0.5	0.0	
Jan. 8, 1908.....	2,120,000	145,600	25	93.0	5.0	1.0	0.3	0.8	
Jan. 12, 1908.....	1,720,000	130,000	25	87.5	9.5	2.0	0.5	0.5	
Jan. 15, 1908.....	2,000,000	68,000	25	92.0	5.0	3.0	0.0	0.0	
Jan. 19, 1908.....	2,008,000	82,400	24	89.0	7.5	3.0	0.0	0.5	2
Jan. 22, 1908.....	1,620,000	79,200	22	90.5	7.5	1.0	0.8	0.2	
Jan. 26, 1908.....	1,224,000	60,800	..	94.0	2.0	3.0	1.0	0.0	
Jan. 29, 1908.....	1,552,000	43,600	20						
Feb. 2, 1908.....	1,496,000	32,000	20	94.0	4.0	1.0	1.0	0.0	
Feb. 4, 1908.....	2,164,000	39,600	25	90.0	2.5	4.5	2.0	1.0	2
Feb. 8, 1908.....	1,200,000	66,000	20	78.0	14.5	6.0	1.0	0.5	
Feb. 16, 1908.....	1,512,000	41,200	..	72.0	19.5	7.0	1.0	0.5	
Feb. 25, 1908.....	736,000	.....	14						
Feb. 27, 1908.....	1,392,000	46,800							
March 6, 1908.....	1,080,000	99,200							
March 14, 1908.....	1,080,000	59,200	..	94.5	1.0	4.0	1.0	0.0	1
April 3, 1908.....	3,280,000	58,400	40	94.0	4.5	1.0	0.5	0.0	
April 5, 1908.....	2,536,000	73,600							
April 20, 1908.....	3,840,000	26,400	..	83.0	14.0	3.0	0.0	0.0	
April 27, 1908.....	2,376,000	32,000	..	88.0	8.0	2.5	1.5	0.0	
May 3, 1908.....	3,920,000	36,800	55	85.5	12.0	2.0	0.5	0.0	2
May 11, 1908.....	.....	.....	..	86.5	12.5	1.0	0.0	0.0	
May 18, 1908.....	.....	.....	..	70.0	24.0	5.0	0.0	1.0	
May 25, 1908.....	.....	.....	..	64.0	30.0	3.0	2.0	1.0	
June 3, 1908.....	5,000,000	12,800	95	57.0	39.0	4.0	0.0	0.0	1
June 14, 1908.....	5,536,000	19,000	..	66.0	30.0	4.0	0.0	0.0	
June 22, 1908.....	6,464,000	16,000	..	78.0	20.0	2.0	0.0	0.0	
July 7, 1908.....	4,928,000	15,400	..	67.2	29.0	3.8	0.0	0.0	
Aug. 4, 1908.....	6,526,000	25,800	96	76.0	19.5	0.0	4.0	0.5	1
Oct. 3, 1908.....	5,052,000	41,600	..	82.0	13.0	4.5	0.0	0.0	1
Oct. 12, 1908.....	5,728,000	61,200	..	94.0	3.0	1.0	0.0	0.0	
Nov. 22, 1908	3,936,000	40,200	..	80.6	15.6	3.3	0.0	0.3	

Examination.—The patient was short and stocky, 5 feet 5 inches in height, weight 155 pounds, not emaciated, skin and mucous membranes pale, panniculus moderate, musculature flabby, no skin lesions. Bony structure symmetrical. General glandular enlargement in all parts of body, especially marked in cervical region, in which there was a massive glandular "collar," nearly obliterating the neck depression between the jaw and the thorax. Numerous lymphomatous nodules on abdomen and back. Tonsils enlarged and lymphoid tissue of tongue and pharyngeal ring markedly increased. Muscles of calves and thighs sensitive to pressure. Sternum sensitive. Slight edema of ankles. Pupils slightly dilated, margins smooth, equal on both sides, reacting to light and in accommodation.

Thorax: Large, symmetrical, breathing slightly dyspneic. Dulness over right front just below clavicle, corresponding to a glandular mass at this point above and below the clavicle. Breath sounds, exaggerated vesicular over this area with an occasional dry, rubbing-like sound. Few moist râles scattered over both lungs.

Heart: Apex beat moderately strong in the fifth interspace in mammary line, movable, no thrill, dulness slightly increased to left. Right edge of cardiac dulness merged with substernal dulness, probably due to enlarged mediastinal glands. Distinct and moderately loud systolic murmur at apex transmitted to left as far as anterior axillary line, apical first and second sounds moderately strong. Both second sounds at base weak with slight relative increase of pulmonic. Pulse equal on both sides, weak, regular, systolic blood pressure 105.

Abdomen: Large, slightly tender, especially over right hypochondrium. Liver easily palpable two inches below costal margin and very sensitive. Spleen enlarged downward to umbilicus, upward to seventh interspace. Surface smooth, somewhat tender, no ascites.

Tibiæ: Not tender. Patellar reflexes present, but weak.

Sputum: Profuse, no tubercle bacilli or elastic tissue fibers.

Urine: Twenty-four hour amount varied from 1,200 c.c. to 3,200 c.c. Average specific gravity 1020, acid, clear. Serum-albumin persistently present. Albumoses absent. No glucose. Slight aldehyd reaction. Cammidge's pancreatic reaction negative. Indican and diazo reaction negative. Sediment shows no casts, few leucocytes and a moderate amount of epithelium.

Blood: Pale, flow poor, hemoglobin 25 per cent. (Fleischl), red cells 1,688,000, white cells 342,000.

Treatment.—Roentgen ray exposures were instituted, Dec. 31, 1907, by the older methods, viz., treatment limited to the spleen and glands. Owing to the marked anemia, especial care was taken to avoid, as far as possible, any toxic effects. Treatments were given with tubes of Walter, 6 penetration, anode distance from surface twelve inches and a current strength of 1 milliampere through the tube. During this first series treatments were limited to ten minutes and were given every third or fourth day. From Dec. 31, 1907, until Feb. 20, 1908, fourteen treatments were given. The white count in this period dropped from 342,000 to 42,000, and the red count decreased to about 700,000 with a hemoglobin percentage of 14. The patient at this time was in an extremely critical condition, dyspneic and weak. There was at this time no increase in the albuminuria or other definite signs of a Roentgen ray intoxication, but the treatments were stopped and with a hope of improving the general condition, high frequency treatments instituted. The apparatus employed consisted of a high potential condenser of rather large capacity discharging across a spark gap in series with a solenoid. Shunt wires were taken from the solenoid to the couch and patient, as with the ordinary D'Arsonval apparatus. The large capacity of the condenser lowered the frequency, while at the same time the length of the spark was reduced, enabling the patient to be placed much nearer the condenser plate, i. e., the dielectric thickness was greatly decreased, thus greatly increasing the condenser effect and allowing stronger currents to be utilized. Fifteen-minute treatments were given daily until March 6, and then at irregular intervals until April, at which time the patient's general condition was very much improved. During this period of high frequency treatment the patient was in a hos-

pital under careful observation, and it hardly seemed probable to us that the improvement was spontaneous, following the discontinuance of the *x*-ray and removal of a possible intoxicating influence. We are unwilling, however, to ascribe it definitely to the high-frequency current, yet the intense influence on metabolism observed in treating anemias by the high-frequency current leads us to the belief that it was not entirely without value. On April 21, 1908, Roentgen treatment was again instituted by the Pancoast method, according to the technic described by him.

Blood Examination.—The blood findings are here tabulated and charted. All blood examinations were made by one of us, so the personal factor is uniform throughout. Wright's stain was used. In all differential counts, only normal cells were considered. All degeneration forms were excluded. In December, 1907, before the institution of the *x*-ray treatments, the percentage of degenerated leucocytes was 29.6 per cent., while in July, 1908, the percentage was 58.6 per cent. The transitional forms of Ehrlich were counted as large mononuclears. The beginning of *x*-ray treatment was followed by the usual drop in the white-cell count, and at no time did they return to the original high number. The lowest point, 12,000, was reached in June, but ordinarily the white count varied from 20,000 to 40,000. The red cells increased in number and in hemoglobin from the beginning of the high-frequency treatments following the critical condition of the patient described above. Attention was especially directed toward the behavior of the lymphocytes in the differential counts. The original percentage was about 90. During the larger part of the bone treatment it was, generally speaking, below this, reaching its lowest point (57 per cent.) in June. It again reached 94 per cent. in October, however. Thus, the leukemic picture has not been lost.

Urine.—This constantly showed nucleo-albumin during the first months of treatment, but not previously. In December, 1907, when the patient first came under observation, the uric acid amounted to 2.37 gm. for the total twenty-four hours urine. On Jan. 15, 1908, following the decided drop in leucocyte count, the amount was 4.09 gm. for the twenty-four hour amount. In October, 1908, the amount was 2.16 gm.

Course of Disease.—The general condition improved remarkably after the beginning of the Pancoast method. The splenic tumor practically disappeared, likewise the glandular enlargement; strength returned, and the patient felt quite well. That is, he was symptomatically cured, but with a persisting lymphocytosis. Therefore, he was not cured, and, unfortunately, the patient's removal to another state has prevented our further observation. We believe that the treatment of the bones by this newer method has undoubtedly been of great value, and, with its originators, recommend its further trial in place of the older exposures to spleen and lymph glands.

237 Michigan Street.

A NEW PHYSICAL SIGN FOUND IN THE PRESENCE OF INFLAMMATORY CONDITIONS OF THE LUNGS AND PLEURA

A PRELIMINARY NOTE

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This sign, which so far as I am able to learn, has not been described hitherto, except in case of the pleura, consists of a rigidity of the muscles of the chest wall, particularly of the intercostals. By making gentle pressure with the tips of the fingers over the intercostal spaces the experienced touch will detect a resistance on the part of the muscles that overlie the inflamed parts which is like that noted in the muscles of the right lower quadrant of the abdomen in appendicitis, in the right hypochondrium in the hepatic colic or the general rigidity of the abdominal muscles when general peritonitis is present.

Special Article

IMPRESSIONS OF PARIS

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1. TEACHERS AND STUDENTS

(Continued from page 703)

THE STUDENTS

As elsewhere the Paris medical students are in three groups—good, indifferent and bad. A casual visitor to the laboratory and the hospital gets only a general impression, and that given to me was of a very industrious hard-working set of men. From the start the student knows that success depends on his brains, or on a facility to use them in a certain way. One word is stamped on his consciousness—*concours*, the public examination for positions of all sorts so characteristic, as I have said, of the French system. He is early made to realize that every single step in his career until he reaches an *agrégé* professorship depends on how he conducts himself at the *concours*. This must have a very steadying effect on a young fellow.

One advantage the French medical student has over all others. To the hospitals of Great Britain and Germany the medical student is admitted as a right; in the United States he is too often only tolerated and not always admitted to the wards! In Paris the hospital is his home. The first thing the young P. C. N. does after passing the examinations which entitle him to study medicine is to visit a hospital. Attendance during the first year is not compulsory, but the practice is universal. The hospital is everything; the medical school is—well, quite a secondary consideration. No matter what may be the leanings of the young man, whether toward science or toward practice from the start, he has his eye on one thing—the interneship—through which portal for more than one hundred years all the famous men of the profession of France have passed. *The* great prize of the student's life, the *internat*, is the pride of the student body, and, indeed, past and present, it is the pride of the profession of the country, since it embraces its select and elect.

To us, with our new graded courses and rigid system, to demand hospital work of first and second-year students seems topsy-turvy and antiquated. There is a movement against the practice, I hear, in France, but not a strong one, and in the new proposals of an additional year to the curriculum I see that hospital attendance is to go through the entire five-years' course. It is interesting to hear what may be said in its favor. Bouchard, President of the Institute of France, controlling member of the Superior Council of Education, Professor of General Pathology in the Faculty and its dominant member, wrote last year a brochure, *Questions relatives à la réforme des études médicales*. Listen to this, you hide-bound advocates of graded courses: "That which the student should learn in his first hour is medicine. . . . From the moment of his matriculation the student should seek to comprehend the thoughts, the occupations, the duties and the responsibilities of a physician. He should accustom himself without delay to think and to feel medically. When he enters the medical school his place is at the hospital as much as at the amphitheater or in the laboratory. It is at the hospital particularly where he will get his moral and intellectual education, and where his senses will be sharpened by observation. His destiny is to consecrate himself to the sick man, and to this sick man he should become attached at the very outset of his student life. Nor need it hinder him in the pursuit of other studies. But, whatever you do, keep him not away for two years from the hospital, and do not let him pass too abruptly from the rabbit and the guinea-pig to man."

How much truth there is in this! And how words of this sort will go to the heart of my friend John Chiene of Edinburgh, and to many, indeed, who feel strongly with Professor

Bouchard that the medical student cannot begin his practical life too soon. Is there not an unfortunate cleavage between the scientific and the practical (i. e., hospital) side of the student life, and has there not arisen in some quarters an antagonism between the science and the art? Now I must own to just a wee qualm when I see these happy first-year students flocking to the hospital wards. Have we been wrong, after all, in this persistent advocacy of a sharp division between the two great groups of studies? But hear Bouchard out.

Three hours in the morning at the hospital, three hours in the afternoon in the dissecting room and two hours for special lectures on embryology or histology comprise his program for the first year. The student's first hour in the hospital would be with an assistant who would begin to teach him a few practical points in dealing with patients, and afterward he could follow the chief and pick up what he could.

Much as I love hospital work and much as I believe in the life of the student in the hospital, I do not think that, with our present congested curriculum, it is an advantage to begin clinical work at once. It may be good for the medical student morally, but I am sure it is bad for him intellectually, and he gleans a heterogeneous accumulation of isolated half-understood experiences, instead of an orderly sequence, in which the acquired knowledge of the laboratories is brought to bear on the problems of disease. And the conditions have changed so much. The old apprentice system had many advantages and we lost a very precious article when that was abandoned; so, too, this plan of turning first and second-year students into the wards and the clinical amphitheater is good, very good; but does it foster an orderly intellectual development so important in the education of a modern physician? I believe not. A more excellent way is in a due sequence of studies which reserves the complicated problems of disease until after the scientific branches have been mastered. Whatever one may think of the system, the fact remains that the student here begins his medical career with the hospital attendance. Indeed, in the preliminary year the men have an eye on the hospital. One of them said in my hearing, "Oh, our Professor at the Jardin des Plantes did not come this morning. I went over to the Pitié [a hospital near by] to see what was going on."

Officially the medical student in the hospital is known as a *stagiairie* (from *stage*, the word used to designate the hospital period) and he serves as such in his second and third years. To the official clinic of the faculty and to certain services of the hospitals the *stagiaires* are assigned in groups of twenty. They are expected to be on attendance at 9 a. m. and they make the visit with the chief and do part of the work of clinical clerks and surgical dressers, a certain number of beds being assigned to each. The students have a choice of service, according to the standing in the examination at the end of the first year. The roll is called, and they seemed to be looked after pretty sharply.

The plan of bedside teaching varies somewhat with different men—on the whole, it is not quite so Socratic or so systematic as in the English and Scotch schools. The new cases are first discussed, and quite elaborate notes are read with diagnosis and suggested treatment, and this is criticised by the teacher. For example, at the Hôtel-Dieu, one morning a *stagiaire* read the elaborate notes of a case of rheumatic fever (with a preliminary caution from the professor to read clearly and with a loud voice as if he was at a *concours*). The report was praised, but the writing was condemned. Then the assistant gave his account of the case, which had a cardiac complication (muffled heart sounds, an extension of the area of flatness) and a discussion took place as to the possibility of a myocarditis. The patient had had a sore throat for a few days before the articular symptoms and this point was dwelt on fully and Lasègue's work on rheumatic angina was referred to at some length. When the patient's chest was exposed there were the marks of eight leech-bites, and the professor's keen eye at once detected that at least three of these were a good deal below the precordia. "Who put those on?" was the sharp question. The head nurse immediately came, but she was not the one wanted, and one of her juniors was sent for, and she was asked if she knew where the heart was situated. She said she had put the leeches where she was told, and then the externe who had given the order was questioned. It was all done sharply and quickly, but good-naturedly, and meant discipline. The notes were carefully prepared and of the new cases the *stagiaire* gave the diagnosis, which was discussed by the professor first with him and then with one of the assistants.

Another morning a student read a very full report of a remarkable case of multiple erythematous lesions with purpura in a man who had a balanitis and (apparently) non-venereal sores. The diagnosis was by no means easy and the differential points were very well given. On another day a case of lead paralysis with great atrophy of the small muscles of one hand was very fully discussed.

One difficulty, almost insuperable in ward teaching, is the crowding and congestion which make it profitable only to the inner ring. Twenty should be the limit. I counted fifty-five one morning in a ward at the Hôtel-Dieu.

EXTERNES AND INTERNES

The whole work of the hospitals is done by two groups of students known by these names. There are no house surgeons, no house physicians. In the Paris hospitals the externes number about 1000, the internes about 250. Both are appointed by *concours* or examination. A student is allowed to compete in the externe *concours* in his second year; the examination is not severe, consisting of elementary questions in anatomy, elementary pathology and minor surgery. The appointment is for three years and the externes act as assistants in the wards and in the out-patient departments; a good deal of the important work of the hospital is done by them.

The interne is a special French product, unlike anything else in the medical world. He is still a student, yet he has all the responsibility of a practitioner and he is house surgeon, house physician, clinical assistant, laboratory assistant, special research student rolled into one. He lives in the hospitals for four years, a sufficient length of time to give him an exceptionally good education and a large experience. He comes into delightful relations with his chiefs, he lives in charming comradeship with his fellows, and if there is anything in him he finishes his term with an admirable bit of original work which appears as his thesis for the M.D. He can not take his degree while an interne.

A first-class interne is about the best hospital product with which I am acquainted, and it is no wonder that as a body the *internat* is looked on as the special glory of French medicine. The internes do all the work of house physicians and house surgeons and have full control of the patients under the direction of the chiefs. They are paid from $120 to $200 a year and have very comfortable quarters. The examination is held by a jury of ten members of the hospital staff. A variable number of vacancies occur yearly, as high, I see, as 81 in 1898, and as low as 50 or 55. In 1901 there were 66 positions, for which 571 men inscribed their names. Out of these only 266 read their written papers and only 183 were admitted to the oral or final examination. A certain number of provisional internes are also chosen, who act as substitutes. Every year there are certain prizes offered, with one of which is associated the privilege of an extra year in the hospital. It is no wonder that we look on the Paris theses (and those also of the other French schools) as containing some of the most valuable literature of the profession. Take an example—the splendid volume on aphasia by Moutier, which appeared last year (and which contained all the proofs of Pierre Marie's new views on the subject) represented the work done for his thesis.

When his term is finished an ambitious interne will try the *concours* for the position of head of one of the faculty clinics, or, if his tastes lie in the direction of the laboratories, for one of the many positions vacant every year in connection with them. If he decides to stay in Paris in a few years he will get ready for the great hospital *concours*—for the positions of physician, surgeon or specialist—and then he will contest for

an *agrégé* professorship, which is as far as his individual efforts can carry him. The final lot, the professorship, is in the lap of the gods, and in the disposing of it, as is well known in Paris and elsewhere, brains are only one factor.

THE HOSPITAL CLINIC

It is fully recognized in Paris that you can not separate the interests of the medical school from those of the hospital, nor either from the interests of the public. The professors of clinical subjects in the university have special wards assigned to them, and each one has a head of the clinic and a head of the laboratory connected with it. The laboratories are provided by the hospitals and every possible arrangement is made to facilitate the teaching of the students and the scientific work in the wards. More of this, when I speak of the hospital organization. There are four professors of clinical medicine—Dieulafoy, Landouzy, Debove and Hayem—each with his head of the clinic and of the laboratories, the interne, five or six externes, twenty *stagiaires*, and usually a group of outside followers. The visit is made at 9 daily, and, as elsewhere, some are punctual, others irregular; but while waiting for the professor one can wander about the ward and see how the patients are progressing. The teaching is chiefly in the wards; the amphitheater is secondary and is very unlike what we regard as a clinic. After the visit the professor adjourns to the amphitheater and gives a set lecture on a case or cases which have been under observation in the wards. The patient may or may not be brought in—usually is not. Corvisart, with whom began set clinical instruction, adopted the plan, and it has ever since been the Paris method.

In an interesting book sent me by my friend Friedel Pick of Prague, Joseph Frank, son of the greater Peter, of Vienna, describes a visit to Paris and Great Britain in 1803; and his account of the clinic at the Charité might have been written to-day. The clinical lecture is usually a finished bit of work and could be taken down verbatim and published with as few corrections as a speech by Lord Rosebery. The method has its advantages when there are no didactic lectures in medicine, but it lacks the interest of an active clinic with the patient and the students and the vigorous discussion. Of course, everything depends on the man, and it affords a good opportunity to bring forward systematically the subjects which are discussed more briefly at the bedside.

Landouzy, the dean, and Dieulafoy are very popular teachers and their wards and lecture-rooms are always thronged. I was glad to find as Professor Landouzy's head of clinic Dr. Salomon, who so skillfully translated my "Practice of Medicine" into French. The Laennec, where Landouzy has his clinic, is an old hospital, but full of interesting cases, and the thorough routine ward work must enable good men to get up a first-rate clinical education.

One of Landouzy's clinics was on a most interesting and unusual subject. Tuberculosis (*bacillose*, they often call it) has been a favorite study of the professor for years, and many who read these lines will have heard his brilliant address last year at the International Congress on Tuberculosis. A young woman of twenty had been in the ward with lesions of both apices. In front of the neck was the scar of a tracheotomy wound for croup at four. She had had pleurisy with effusion at the age of fourteen. The point of special moment in the case was the possibility of infection through the tracheotomy wound. Professor Landouzy had collected a number of cases in which this sequence of events had happened, and he stated that very few persons with tracheotomy wounds lived beyond the twenty-first year—most of the subjects were carried off by tuberculosis. Another interesting observation he had made was the frequency with which individuals with severe smallpox pitting had tuberculosis; he believed that the infection dated from the attack of variola.

An excellent point at all the clinics is the opportunity afforded to the assistants to help in the teaching. On a Wednesday at the Hôtel-Dieu at 10:30, after the morning visit, the professor and assistants and students go into the amphitheater and two of the assistants lecture, half an hour apiece, either describing to the class some special laboratory technic, the subject for demonstration the next day, or a special case is considered. For example, on November 27, the associated symptoms of senile pneumonia and the Widal reactions were fully discussed by two of the assistants; on December 2 the psychology of a progressive dement, a musician, was analyzed, and the patient exhibited; while the head of the clinic, Dr. Crouzon, described the technic of cytodiagnosis in spinal and cerebral affections. This is first-rate experience for the men and the practice of the *concours* gives them an enviable facility of diction.

I "assisted" (to use one of Professor Dieulafoy's kind words with which he introduced me to his class) at the longest clinic I have ever known on a single patient. Now and again it happens that a teacher will find a case of such interest that two days are taken for its discussion, but to go on for five successive Saturdays, and to hold large audiences of students and physicians, and to have interest wax not wane, is a *tour de force* of a master of the amphitheater. And such indeed is Professor Dieulafoy, a pupil of Trousseau and his successor, and author of the most popular French text-book of internal medicine. The Trousseau amphitheater is not very large and by 10:30 on Saturdays there is "standing-room only," and not always that! The audience is largely made up of physicians and one is surprised to see so many women—one morning I counted twenty-five. The subject of this memorable clinic was a woman, looking about thirty-six years of age, who five years ago had had an illness with cerebral symptoms and fever. Following this she began to have epileptic fits; she then developed complete left-side paralysis of the facial, partial paralysis of the third and paralysis of the sixth in the opposite side. The history and the attacks were the subject of the first lecture, at the end of which a written statement was read summarizing the main features; the second lecture dealt with the diagnosis of the type of epilepsy; the third with the situation of the lesions which would explain the symptoms; a positive diagnosis was made of a basilar meningeal lesion; the fourth lecture considered the nature—tuberculosis and coarse gummata and specific arteritis were excluded and a diagnosis was reached of a chronic syphilitic meningitis; while in the last lecture the prognosis and treatment were considered in full and the patient's rapid improvement under specific treatment was held to bear out the diagnosis of the nature of the trouble. The patient was brought in for a short time each day. Dieulafoy is an extraordinarily dramatic lecturer—all the accessories of facial expression and of movements of hands, arms and shoulders are used. A rapid utterance, the short interrogative method, the appeal to the patient, the choice language, a pleasing voice, a keen sense of humor—all combine to make the Saturday clinic at the Hôtel-Dieu a great treat.

Professor Raymond, at the Salpêtrière, Charcot's successor, has one of the most popular clinics, and in his hands the traditions of the great master are fully sustained. The extraordinary wealth of material makes it possible to bring together large groups of cases illustrating special diseases. On two successive clinics, cases were shown illustrating the relationship of Friedreich's ataxia, Marie's heredo-cerebellar ataxia and the family forms of spastic paraplegia. On another day two members of different families, the subjects of hereditary optic atrophy, were demonstrated. The Charcot clinic is one of the best organized in Paris, and, under Professor Raymond's direction, maintains its reputation as the leading school of neurology in Europe. The men in attendance are almost all postgraduates and the general arrangements for study and research are admirable.

On the whole I have the impression that the Paris medical student gets very close to the patient, and, if diligent and successful in becoming successively externe and interne, he certainly has opportunities of an altogether exceptional character. I am not so sure about the ordinary *stagiaire*, who seems rather out in the cold. Many reforms are under discussion. It is urged, and rightly I think, that there are too many theoretical lectures, but that is a point which has already been settled by the students—who simply do not attend them. The audiences in the lecture-rooms of the medical school are largely graduates and casual visitors. With the

introduction of a five years' course it should be possible to plan a model curriculum. The number of highly trained and enthusiastic young teachers is very large, and the arrangements for clinical instruction are excellent. Above all, the French realize that the only teaching of value in medicine and in surgery is at the bedside, and they may be able to work out a scheme in which, under modern conditions, the science and the art, the art and the science, will go hand in hand throughout the five years of the curriculum.

(To be continued)

Therapeutics

CONSTIPATION

That ever-troublesome condition can not be too frequently discussed, as not only the laity, but the profession seem to fail to recognize its importance as a predisposing and primary step to more serious conditions. The layman and the layman's parents allow the condition to develop, and the physician gives either drugs, or a little advice and drugs, when he should give very few drugs and very much advice.

Dr. B. K. Ellis, of Greeley, Colo., in the *Therapeutic Gazette*, September, 1908, offers many valuable suggestions for the management of constipation. He well says that "a careful analysis and accurate diagnosis of each causal factor is essential to the intelligent treatment of this symptom" or condition. As has been so frequently pointed out, he says "the consumption of highly seasoned foods and a close attention to social or financial duties with the consequent neglect of the calls of Nature are largely the starting point of chronic constipation." If the reflex indication which fecal matter in the rectum gives is neglected, such reflexes either become less and less acute, or finally may be lacking, and fecal matter accumulating dilates the rectum. Then it is only by strenuous muscular effort, or by excessive dilatation with enemata, that movements are obtained.

Constipation may be caused by the taking of food that is so completely digested as to leave insufficient residue to act as a stimulus to intestinal peristalsis. On the other hand, large amounts of indigestible substances may be taken and, dilating the walls of the intestine, in time cause atrophy and consequent constipation. Either of these conditions being diagnosed as an etiologic factor in the constipation, the proper treatment suggests itself.

If the contents of the upper intestine are rapidly digested and peristalsis is abnormally slow, the water from the intestine may be too completely absorbed, the intestinal contents become less fluid, and sluggish passage of the contents of the gut is the consequence. Also, if large amounts of liquid are passed by the kidneys, or if the person sweats profusely and insufficient water is taken into the system, the water from that reason is absorbed from the intestines and constipation is the result.

If constipation is the only condition present it should be readily corrected if the causes are once known and the antidote ordered. If constipation is a symptom of another condition, or a coincident condition added to the disease or condition that is present, its treatment may not be, of necessity, the best for the constipation, but must be, perhaps, modified by the treatment necessary for the disease or concomitant conditions.

The most important part of the treatment is the correction of the dietary of the patient, and generally the patient needs food that leaves more cellulose for the intestinal muscles to act on. This means plenty of vegetables. Fruits should be given freely, except the astringent fruits. The amount of water taken depends on the patient's habits and the condition of the circulation. A patient who is muscularly active should drink more water than the one whose life is sedentary. A glass of cold water drunk in the morning while dressing is a great help to a physiologic movement of the bowels directly after breakfast. The morning coffee is also a stimulant to peristalsis.

The patient should go to stool every morning at the same hour whether the desire is present or not, and should attend to the matter at hand, and, as Ellis says, should not read for diversion.

Abdominal massage, calisthenics, regulated exercise, walking, rowing, riding, golf playing, or any other muscular exercise that seems advisable should be ordered for the patient of sedentary habits, and it must be urged on him that if the habit of constipation is not now cured the future promises intestinal indigestion, dyspepsia, imperfect action of the liver, imperfect bile, nervous irritations, kidney irritations, and early cardiovascular-renal disease, i. e., arteriosclerosis, weakening of the heart, and chronic interstitial nephritis.

Also it is certainly the fact that a patient who has been long constipated and suffering from more or less chronic toxemia, as shown by dull headaches, sallow skin, coated tongue and poor digestion can not possibly withstand acute diseases, or operations that may be necessary, as well as a patient who has not had a long habit of constipation. In other words, a daily normal movement of the bowels is an asset so far as future health emergencies are concerned, the same as is a heart that has not been damaged by tobacco.

Before any severe exercise or any abdominal massage is ordered, or advised, a careful abdominal examination should be made and the physician assured that there is no inflammatory conditions present, as chronic appendicitis, gall-bladder disturbances, pelvic or other disturbances.

Ellis applies "manual massage to the abdomen from fifteen to twenty minutes, beginning with light, circular stroking of the abdomen about the umbilicus, first having lubricated well the parts with olive oil; these strokes are gradually widened and pressure increased until the course of the colon is being massaged deeply, all fecal masses broken up and moved down toward the rectum." When massage is deemed inadvisable or inconvenient, faradic electricity may be used. Ellis places "a large electrode over the lumbar or sacral spine and the other is moved over the abdomen, stroking from right to left." He advises "the interruption of the current from two to six times a second, and the duration of the seance and strength of current depend on the results and sensations of the patient."

If ordinary means and methods fail to cure the constipation, it will often be found that the anal sphincter is very tight and does not relax properly, so that, when fecal matter is in the rectum, its evacuation is almost impossible. With this condition of the sphincter present the rectum is often found greatly dilated. Forcible dilatation of the sphincter ani under an anesthetic, or its gradual dilatation with bougies or water bags, is generally advisable.

A not infrequent, though often undiscovered cause of constipation is overdevelopment of the semilunar valves

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or the valves of Morgagni. These hindrances to the passage of fecal matter, situated just above the external sphincter, are amenable only to surgical intervention, which procedure, however, is easily accomplished with satisfactory results.

If the patient has a habit of using daily large rectal enemas, almost irrigations, or taking large quantities of water and retaining it for a time, dilatation of the rectum and of the sigmoid flexure, and even of the descending colon, has occurred. In these cases help may be obtained by a daily diminution of the bulk of water used.

The best medicinal treatment of constipation consists in the administration of the fluid extract of rhamnus purshiana (cascara sagrada) or some form of aloes or aloin (generally best combined with belladonna and strychnia). Sometimes podophyllin may be used separately or combined with other laxatives. There are no other laxatives or cathartics so likely to cure constipation as these drugs. Whichever one of these is used, it should be given, week by week, in gradually diminishing doses. Whether they should be given in small doses three times a day, or larger doses once a day depends on the conditions. Generally, the patient not being sick and not willing to be bothered, and with the intent of having a stool after breakfast, and the medicine requiring a certain length of time to act, directly after supper or at bedtime, in one dose, is the best treatment. However, even with the best possible care, when these drugs are given, some patients require a dose daily for months and even years, and can not obtain a stool without it. This is generally not due to the action of the pill on the mind, as the substitution of an inactive tablet will prove.

Perhaps the next best laxative is phenolphthalein, the new synthetic cathartic. This drug seems to be harmless, and seems to act well, and, if given in tablet, should be crushed with the teeth before swallowing, as it apparently acts better when well granulated.

In the simple constipation that is now being discussed it is inadvisable to resort regularly to enemas of any kind or to more brisk cathartics than those above mentioned or to saline cathartics.

Unfortunately, the drug of most promise in constipation, cascara sagrada, as obtained from the drug stores is many times worthless, so far as laxative activity is concerned. On the other hand, some cascara preparations offered to the profession contain other ingredients than cascara, and consequently being more active are supposed by the physician to be more satisfactory, but the patient is really getting a more active drug than the physician desired. The physician should, therefore, be very careful to select and to obtain the best possible pure cascara sagrada preparation for each patient, and after finding the amount of this preparation that the patient needs for laxative effect, should gradually reduce the dose week by week until the patient is cured.

TAPEWORM

The frequency with which treatments to eradicate a tapeworm from the intestine are unsuccessful is well known. The cause of this is generally because the intestines have not been thoroughly cleaned; in other words, the intestines, for the best action of the anthelmintic, should be as nearly empty as possible not only of food and the products of digestion, but also of the large amount of mucus which irritation from the parasite has caused.

Consequently, before the anthelmintic is administered, at least two days should be devoted to the preparation of the patient for the treatment. The patient should give up his business and attend to the matter in hand. The diet should be liquid; milk, not more than a quart, beef tea and coffee if he desires. During these two days he should receive a small dose of salts three times a day so that the upper part of the intestines may be thoroughly cleaned. The following is satisfactory:

R.	gm.	or	c.c.
Magnesii sulphatis	60		ʒii
Spiritus chloroformi	12	or	fl.ʒiii
Aquæ, ad	180		ad, fl.ʒvi

M. et Sig.: A tablespoonful, in water, three times a day, an hour before meals.

If there is much purging, the frequency of the movements may be lessened by an occasional dose of 1/10 of a grain of morphin, the object aimed at being to have the intestinal canal cleaned, especially of mucus, before the anthelmintic is to be administered and at the same time not to prostrate the patient too much.

At bedtime the evening before the specific drug is to be administered the patient should receive two tablespoonfuls of the above magnesium sulphate mixture. If this has not acted well by 8 o'clock the next morning, the same dose should be repeated.

The male fern should be given as follows:

R.	gm.		
Oleoresinæ aspidii	4	or	ʒi

Fac capsulas, 8.

Sig.: Four capsules, with half a glass of hot water at 9 a. m., and four capsules, with hot water, at 10 a. m. [Important: Before taking the above capsules each one should be uncapped.]

At 12 o'clock three tablespoonfuls of the magnesium sulphate mixture should be taken to insure the rapid passage of the male fern through the intestine lest too much absorption take place.

During this morning no nutrition should be taken other than black coffee, clear tea, or bouillon.

Except when momentarily otherwise engaged, the patient should be in bed, and should stay in bed the remainder of the day. For unavoidable faintness brandy may be administered at any time, or a hypodermatic injection of strychnin may be given. After 1 o'clock any food may be given the patient that he desires.

During the three or four hours of this active treatment, viz., from 10 a. m. to 1 or 2 p. m., the physician should remain with the patient, or a thoroughly trained nurse should be in attendance.

The stools should all be passed into receptacles where they can be thoroughly strained afterward in order that the parasite's head may be sought, and if the above treatment is carried out it will generally be found.

BATH POWDER

As many esthetic persons delight in the pleasure of an effervescing perfumed powder added to the bath, the following from the *Druggists Circular*, October, 1908, seems to be a pleasant suggestion for such a powder:

Sodium bicarbonate	3 ounces.
Tartaric acid	2½ ounces.
Starch	4 ounces.
Oil of lemon	½ dram.
Oil of orris	5 minims.
Oil of ylang-ylang	5 minims.

(Any perfume may be substituted for the above if preferred.) As many such powders may be ordered as desired, and one powder added to the bath when it is ready.

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For other information see second page following reading matter]

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CONGENITAL FAMILY CHOLEMIA

One of the most fascinating features of the study of medicine is the constantly occurring changes. New signs are continually being described, and new diseases are constantly being split off from groups which appeared in the not distant past to be reduced to their final segregates. Among these relatively new conditions is one so far but little noted in this country, the disease known as congenital family cholemia or acholuric jaundice. Isolated instances and small groups of cases have been described for years, and recently Hawkins and Dudgeon[1] have collected most of these, and have added some carefully studied cases of their own. It is probable that, like other apparently rare diseases, the condition will be found to be more common when more widely known.

The main characteristics of this curious affection are indicated in its name; it tends to affect several members of a family, it is usually congenital, and it is characterized by the presence of biliary constituents in the blood. The patient differs from most jaundiced individuals, however, in several particulars. He or she, for both sexes are equally attacked, is generally jaundiced from birth or shortly after, and the jaundice persists for years with little or no change. There is a difference also from ordinary icterus in that the urine is free from bile pigment, the stools contain bile, and itching and other signs of constitutional disturbance are lacking. There is no gastrointestinal disturbance, the appetite is good, and the bowels regular. These patients develop normally, both physically and mentally, are able to bear the stress of ordinary workaday life, and in the case of women to bear children. In spite of this there is present besides the jaundice a considerably enlarged spleen and a moderately severe grade of anemia. So far as can be judged from the small number of cases recorded, life is not materially shortened by the disease. These patients may seek relief from the jaundice because their peculiar color caused unfavorable comment; they may at times have pain over the liver and spleen with deepening of the jaundice and slight fever, but, as a rule, they live as long as the average individual.

The relation of this condition to other forms of congenital icterus and to hypertrophic cirrhosis is dubious, and the cause of the condition is still obscure. Pick has reported cases of family icterus without splenic enlargement, and, on the other hand, family icterus with hepatic involvement has been described. In congenital family cholemia no cirrhosis of the liver is present. Certain physicians of the French school have tried to show a relation between this condition and dark muddy complexions, melanoderma, various pigmentary skin diseases, and certain gastrointestinal, renal, and articular affections, all of which are claimed to be due to an excess of bile in the blood serum. These claims are, to say the least, somewhat fanciful. Hawkins and Dudgeon suggest as a possible cause of congenital family cholemia inborn defects in the minute structure of the liver whereby the bile can enter directly into the lymphatics, or changes in the ducts producing alterations in the bile pressure. In either event the condition produced would resemble ordinary chronic jaundice, and, as these authors point out, the blood changes in cholemia, moderately severe anemia with poikilocytosis and megaloblasts, are not those of ordinary jaundice. They are inclined to believe that the jaundice is merely symptomatic, a hematogenous icterus due to hemolysis. They show that the red blood cells in these patients are more fragile than normal, and point out that occasionally they have hemoglobinuria. It seems probable that the disease is primarily one of the blood-forming organs, and that the jaundice is only symptomatic. The exact nature of the defect in these organs is still a question.

1. Quart. Jour. of Med., January, 1909.

COSMOBIA, A NEW CONCEPT IN TERATOLOGY

The recent activity in the field of teratology is more than a revival of the older descriptive methods. Parallel with Mall's[1] studies on the causes underlying the origin of human monsters, we have had an extensive series of researches in the field of experimental teratology, of which the latest and most striking examples are seen in the artificial production of cyclopean monsters by Stockard and Lewis. Stockard[2] finds that by treating the eggs of the common minnow, *Fundulus*, with solutions of magnesium chlorid immediately after fertilization he can produce at will as high as 50 per cent. of cyclopean monsters of various degrees of abnormality. Dr. Warren H. Lewis[3] has reported a parallel series of experiments in which he has produced almost identical defects in the same species of fish by destroying in later developmental stages the extreme anterior end of the medullary plate before it has invaginated to form the central nervous system. Very recently, too, Dr. H. H. Wilder has supplemented his interesting critical examination of an extensive series of double studies on duplicate twins and double monsters[4] by a

1. Jour. Morphology, February, 1908.
2. Science, Oct. 2, 1908: Jour. Exper. Zool., June, 1907.
3. Association of American Anatomists, Baltimore meeting, Dec. 29, 1908.
4. Duplicate Twins and Double Monsters, Am. Jour. Anatomy, Sept., 1904, iii, No. 4.

critical examination of an extensive series of double monsters, Janus types, cyclops types and related forms.[5]

The interesting feature of the latter paper lies in the fact that Dr. Wilder has brought under one law the whole series of symmetrical monsters, both "monsters of defect" and "monsters of excess." All bilaterally symmetrical vertebrate bodies, of both usual and unusual forms, develop in accordance with orderly laws of their own and are termed *"cosmobia,"* orderly living beings, as distinguished from deformities, or lawless aberrations of development. Cosmobia may be normal beings or abnormal or unusual. The abnormal cosmobia are some of them less than typical individuals (*"monstra in defectu"*); some of them are more than single individuals (*"monstra in excessu"*).

The recognition of the kinship between the defective monsters of the cyclops type and double monsters, or diplopagi, enables Dr. Wilder to construct several interesting series of forms based on recorded cases. The most interesting of these, and also the one most clearly illustrating the principle of cosmobia, is the linear series extending from cyclopean monsters of defect on the one hand to completely separate duplicate twins on the other hand. Starting with the extreme cyclopean defect without nose or eyes, we pass by close stages to the cyclopean forms with the two eyes completely fused in the middle line and nose abortive, then to forms with the eyes incompletely fused, becoming progressively farther apart, until the nose is able to grow down between them. Then follow in the series normal beings with very narrow features, average features and very wide features, leading up to incipient duplication. Various stages of diprosopy are next enumerated: forms with the nose and mouth duplicated but only two eyes; double nose and mouth and three eyes, two lateral and one median, the median eye representing a fusion of the right eye of one of the two individuals with the left eye of the other; then various stages of farther separation of the features, leading to two-headed monsters and finally to perfect, separate duplicate twins.

Dr. Wilder's contention is that each member of this series, both the normal and the abnormal, develops in accordance with a definite lawful pattern of its own, and that all these beings should be distinguished from the misshapen deformities due to sporadic or special causes. The careful dissections of representatives of several of these cases which are presented in the paper go far toward a substantiation of his claim.

THE RELATIONS BETWEEN SO-CALLED ENDOTOXINS AND TOXINS

The theory that the symptoms of intoxication of many infectious diseases, e. g., cholera, typhoid, plague, dysentery, tuberculosis, are caused by the so-called bacterial endotoxins, that is, substances set free on microbic disintegration as distinguished from toxins which are regarded as true secretions, was advanced by Pfeiffer about sixteen years ago. According to this theory, there is no real secretion of toxins by the bacteria in question, at least not of such kind and amount as to account for the intoxication; on the contrary, the endotoxins are so firmly bound to the bacterial cells that they are liberated only by severe, disintegrative procedures, and in the infected body they are held to be set free only as the bacteria disintegrate and pass into solution under the influence of the antibacterial substances of the blood. The basis for the theory was the observation Pfeiffer made on guinea-pigs injected intraperitoneally with living cholera germs: Before long the peritoneal contents and blood were sterile, the cholera germs being rapidly killed, and yet the animals died from intoxication caused, he concluded, by poisons contained in the bacterial substance itself. Analogous results were obtained with typhoid and other bacteria, and the intraperitoneal injection of bacteria killed by heat, toluol or chloroform produced the same symptoms and the same results as the injection of virulent living bacteria. Subsequently when prophylactic inoculations of killed bacteria came to be practiced on human beings it was soon learned that they may cause marked intoxication of human beings also, so that careful dosage is required. Certain clinical observations also harmonize well with the endotoxin theory. Thus in typhoid and paratyphoid fever the symptoms of intoxication do not reach their height when the bacteria in the blood are most numerous, namely, in the beginning of the attack; the severe intoxication sets in as the agglutinating and bactericidal powers of the blood increase above normal and the bacteria disappear more or less completely. Whatever toxins are secreted early are tolerated readily, it would seem, but the liberation of endotoxins on bacterial solution causes severe symptoms.

The theory as originally propounded left the question of the formation of antiendotoxins open, and the continuous failure to secure really satisfactory evidence of such antitoxins (until possibly just recently) before long led to the belief that the endotoxins have no antigenic properties, consequently differing radically from the true toxins such as are formed by the diphtheria and tetanus bacilli and have the power to induce the formation of specific antitoxins. By way of example, it may be mentioned that patients convalescing from typhoid fever have been found to be just as susceptible to the toxic action of killed bacilli as normal persons. Similar observations have been made as regards plague. These results are not necessarily decisive, however, as the observations may have been made before immunity had developed. Animals immunized with typhoid, cholera and other bacteria of this class yield serums with specific bacteriolytic, opsonic and agglutinating powers, but with little or no real curative effect outside of the laboratory and then only under special conditions not

5. The Morphology of Cosmobia, Am. Jour. Anatomy, December, 1908.

obtainable in actual practice. Nevertheless, the search for active antiendotoxic serums has been continued with the result that recently a number of investigators have come forward with results which they claim overthrow Pfeiffer's whole endotoxin theory, establishing in its stead the theory that in the infections under consideration we are after all dealing with toxins of the regulation type and fully endowed with antigenic powers.

On the basis of results obtained by himself and others, Kraus claims that poisons endowed with antigenic powers, hence neutralizable by specific antitoxins, constitute the real pathogenic agents in cholera, plague, typhoid, dysentery and cerebrospinal meningitis. If the views of Kraus and others prove correct, the outlook for a great enlargement of the field of usefulness of antitoxic therapy would be most promising. At present there are, however, weighty reasons against the unqualified acceptance of these views. As pointed out by Pfeiffer[1] himself, many of the experiments on the results of which Kraus and others base their claims were made with filtrates of old broth cultures and with substances obtained by various methods, all of which may have contained poisons more or less artificial in nature and consequently without real significance so far as the actual spontaneous disease is concerned. When endotoxins are split up by autolysis or other processes, it may well be that among the products true toxins will be found which, however, play no part or only a subsidiary one in the natural intoxication. It is probable, too, that bacteria regarded as producing or containing endotoxins may produce exotoxins which, however, can not explain adequately the pathogenic powers of the bacteria themselves. As examples, one can mention the staphylococci which produce leukocidin, a true toxin, and certain vibrios that produce hemolysins, likewise true toxins. If it is insisted that true antiendotoxic qualities are to be attributed to such serums only as are able to neutralize completely and to render physiologically harmless intact toxic bacteria, whether living or killed, then it becomes exceedingly doubtful whether it rightly may be claimed that antiendotoxins have been obtained and that the whole endotoxin theory must be abandoned. Many investigators are now at work on problems involved in this question of endotoxins, and undoubtedly further developments will come before long.

1. Centralbl. f. Bakt., xlii, Supplement to part I, Referate, 1.

THE LONGEVITY OF LEUCOCYTES IN ALIEN SERUM

We are just beginning to realize the possible applications of experimental serologic and biologic methods to diagnosis. Since the clinical application of Pfeiffer's phenomenon other serobiologic tests have been devised, notably Uhlenhuth's test for blood stains, Wassermann's test for syphilis, and Wright's test for opsonins. Recently, we believe, there have been suggestions that the phenomena of anaphylaxis may be utilized in the diagnosis of tuberculosis. An interesting line of investigation, as yet but partly worked out, has been suggested by H. C. Ross.* He has devised a method of estimating the life of leucocytes after they are removed from the body, and has tested the effect of the plasma of other persons, healthy or suffering from infectious diseases, on the leucocytes of normal individuals. He finds that normal leucocytes in their proper plasma live a considerable length of time, over forty-eight hours very often, outside the body. He also shows that the leucocytes of healthy people die more quickly than usual in the presence of blood plasma from other healthy people, and much more rapidly than usual in the plasma of people with malaria, typhoid fever or phthisis. On the other hand, the life of the leucocytes from a person suffering from phthisis or typhoid is very little affected by the plasma of another person suffering from phthisis or typhoid. This suggests that in a person with an obscure disease the leucocytes might be tested with plasma from people with a variety of diseases, especially plasma from those diseases which are suspected in the obscure case. In case the leucocytes from the patient with the obscure illness are resistant to one plasma only, it might fairly be assumed that the patient was suffering from that disease, or had been recently, and that the leucocytic resistance to that particular plasma was explained by an immunity of the leucocytes to the poison of the disease. The technic of the test is rather complicated, but less so than that of the Wassermann test. It is difficult to see, *a priori*, why the method might not turn out to be of great value. It is probable that serums from patients with various diseases could be kept in stock, and that in this case the test would not be a very complicated one.

* Lancet, Feb. 9, 1909.

THE INFLUENCE OF CALCIUM AND CITRIC ACID ON BLOOD COAGULATION

Since Wright's researches in 1893 the salts of calcium have been widely used in various conditions in which the coagulability of the blood was thought to be reduced. At that time Wright claimed that single doses of calcium chlorid would reduce the coagulation time, in some instances, from 60 to 70 per cent. The general idea underlying calcium therapy has been that the internal administration of the calcium salts increased the calcium in the blood, and this induced more rapid coagulation. Citric acid, on the other hand, reduces the calcium content of the blood, and its internal administration is claimed to decrease the coagulability of the blood. While these effects have been experimentally demonstrated, it has still been a question whether or not the increase or decrease in calcium in human blood, produced by the administration of calcium salts or citric acid, was great enough to cause an increase or decrease in coagulability. Addis† has recently restudied the question, using a more accurate method of calcium determination, and a coagulometer more accurate than that of Wright. He concludes that the coagulation time of the blood is unaffected by the

† Quart. Jour. of Med., January, 1909.

internal administration of soluble calcium salts or citric acid in the doses which we ordinarily prescribe. He acknowledges that the amount of ionizable calcium is increased by the administration of calcium salts and diminished by the use of citric acid, but states that the increase and decrease is much less than is needed to have any appreciable effect on coagulation. It looks as though we should either have to increase considerably the dosage of the calcium salts and citric acid when we give them for the purpose of affecting coagulability, or we shall have to find some more efficient means of introducing them into the circulation. In view of the above facts, the recent observations of Chantemesse[1] must be taken with a grain of salt. While this author seems convinced that he is able to control blood coagulation, his most convincing case, the typhoid patient with both hemorrhage and thrombosis, might have been due to coincidence. The occurrence of hemorrhage and thrombosis in the same patient is by no means unknown.

THE AUTOMOBILE NUMBER

In the presentation of its third Automobile Number THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION is contributing to the practitioner a symposium of experience on a very practical question. Except for the few whose work is limited entirely to office practice, the question of horse or automobile comes very close to the physician. The question now seems to be, not "Shall I use an automobile?" but "What machine shall I buy?" and on this point there is abundant testimony that any good perfected machine will give good service, but that some are better than others under certain conditions. It is apparent from the opinions expressed that there are arguments for various types of cars according to the local conditions in which they are to be used. It is also evident that a machine with which one man has been dissatisfied may have been highly satisfactory to another. Sometimes this is found to be because a physician's first automobile has to bear the brunt of teaching him the fundamental axiom that an automobile has its limits and must receive intelligent care. In addition, a physician's first automobile is not infrequently an experiment, or a second-hand one partly worn, bought cheaply with the intention of learning—at a minimum outlay—not only how to run a car and care for it, but also what type of machine he will wish to purchase when he is ready to put more money into it. Again, as before, emphasis is laid by many writers on the value of an automobile and its care as an avocation—a mind-freeing diversion from the strain of practice. This is a point by no means to be lightly considered. We again express our thanks to all who have contributed to make this Automobile Number a success. As usual, the names of the automobiles are not given in the text, but are indicated by numbers. These numbers and the corresponding names of the cars, with also the names and addresses of the manufacturers, are given in the Automobile Key, a separate pamphlet. A copy of this key will be sent on request if a self-addressed stamped envelope be enclosed.

1. THE JOURNAL, Feb. 20, 1909, p. 668.

Medical News

ALABAMA

Physician Fined.—After two mistrials, a jury in Morgan county is said to have returned a verdict for $1,750 against Dr. John B. Shelton, New Decatur, for alleged malpractice. It is claimed that owing to an error in a prescription of the physician, a 6-year-old child was made blind.

Society Meeting.—At the annual meeting of Jefferson County Medical Society, held in Birmingham, Dr. Joseph D. Heacock, Birmingham, was elected president; Dr. Zachariah B. Chamblee, North Birmingham, vice-president; Dr. Arthur F. Toole, Birmingham, secretary-treasurer; Dr. Henry N. Rosser, Birmingham, county health officer, and Dr. Russell Mc. W. Cunningham, Ensley, censor. Dr. Edward H. Sholl, Birmingham, after serving 25 years as a member of the board of censors, resigned. On this announcement being made, Dr. Cunningham presented Dr. Sholl with a handsome loving-cup. ——The lease of the new quarters for the society in the Chamber of Commerce Building has been signed by the president. Space has been secured providing for a general meeting room, reading place, secretary's office, and the use of the auditorium.

CALIFORNIA

Hospital Notes.—Patients were received for the first time in the new Merritt Hospital, Oakland, January 23. The completed part of the hospital will accommodate 40 patients, and has been erected at a cost of about $200,000. Dr. Alvin Powell has been appointed resident physician.——The Sisters' Hospital, South Chico, was totally destroyed by fire January 14, with a loss of $10,000, partially covered by insurance. The patients were removed in safety. Negotiations have been made for the purchase of the Roper family residence, to be used as a temporary hospital.——Dr. Francis E. Corey has opened a small hospital in Alhambra.

County Medical Society Meeting.—At the annual meeting of San Francisco County Medical Society, held January 12, the following directors were elected: Drs. Harry E. Alderson, Philip K. Brown, Frank B. Carpenter, William E. Cheney, Charles M. Cooper, George F. Ebright, Philip Mills Jones, Henry B. A. Kugeler, August J. Lartigau, Samuel J. Hunkin, Harry M. Sherman, Emmet Rixford, Charles G. Levison, Herbert C. Moffitt, Howard Morrow, Arthur A. O'Neill, F. Dudley Tait, George H. Evans, Morton R. Gibbons, George B. Somers, and John C. Spencer. At the meeting of the directors, January 19, Dr. August J. Lartigau, for some time librarian of the society, was elected president.

COLORADO

Clinical Years at Denver.—An amendment to the constitution of the state has been passed by the legislature which gives permission to the state university to conduct the last two years of the medical course at Denver on account of the larger clinical facilities which obtain there. The bill has to be submitted to and approved by the people at the next general election before it becomes a law.

CONNECTICUT

Society Meetings.—At the annual meeting of the Waterbury Medical Society, Dr. Charles A. Monagan was elected president; Dr. John M. Benedict, vice-president; Dr. Edward F. Ashley, secretary, and Dr. Charles S. Rodman, treasurer. ——The Society of Regular Physicians, at its annual meeting in New Britain, elected Dr. T. Eban Reegs, president; Dr. William W. Brackett, vice-president; Dr. Catherine H. Travis, secretary-treasurer, and Drs. Herman Stosser, Jay S. Stone and Samuel W. Irving, censors.

Report of Tuberculosis Commission.—The commission on tuberculosis, in its report to the General Assembly, recommends notification and registration of all cases of tuberculosis in every community; control of indiscriminate expectoration; rational tenement house legislation, embracing construction and subsequent inspection; sanitary supervision of all buildings where people are brought into intimate association; scientific supervision of the dairy and food industries, and intelligent efforts to educate the public on sanitary precautions.

Milch-Goat Keepers' Meeting.—The first annual meeting of the Connecticut Milch Goat Keepers' Association was held at West Hartford February 2. The president, George W. Smith, Melrose, made a demonstration analysis for milk fat and milk solids, showing that cows' milk contained 4.4 per cent. fat and 14.16 per cent. solids, while goats' milk contained 5.8 per cent. fats and 15.46 per cent. solids. Increased interest is

being manifested in the milch goat industry, and the membership in the association already includes seven states in the Union. Several physicians have united with the organization, and the first annual field meeting is set for July 5, at the home of Milo N. Woodring, Hamden, near New Haven.

ILLINOIS

Occupational Disease Commission Appointed.—The governor appointed on March 1, the following persons, members of the Commission on Occupational Diseases, authorized by the General Assembly: Dr. George W. Webster, Chicago; Dr. James A. Egan, Springfield; Hon. David Ross, secretary of the bureau of labor statistics; Hon. Edgar T. Davies, chief factory inspector; Prof. Charles R. Henderson, James Simpson and Drs. Ludvig Hektoen, Alice Hamilton and Arnold C. Klebs, Chicago.

Interne Examination.—The Cook County Civil Service Commission announces that examination will be held March 9 to 11, for interneships at Cook County Hospital and at the Dunning institutions. The service at Dunning is for one year and includes a compensation of $12.50 per month, with board, lodging, laundry and an additional $150 to be paid at the end of twelve months' continual service. On March 16, examinations will be held for an *x*-ray operator and a librarian at Cook County Hospital.

Bills Introduced.—Senate bill No. 4, introduced by Mr. Glackin, which provides for a state sanatorium for consumptives, is still in committee on appropriations. Senate Bill No. 35 prohibits the selling of undrawn poultry. Senate Bill No. 43 provides for the testing of sight and hearing of pupils in the public schools. Senate Bill No. 139, introduced by Mr. Glackin February 16, which enables cities, villages and counties to maintain public tuberculosis sanitoria, has passed the senate and is now on its third reading in the house. Senate Bill No. 214, introduced by Mr. Downing, provides a state board of osteopathic examiners, the examination to include "osteopathic obstetrics," gynecology and minor surgery, and also the issuance of licenses to osteopaths. House Bill No. 22 prohibits the admission of children to public schools unless they shall have been vaccinated. House Bill No. 23 requires vaccination of children before reaching the age of two years, and also prohibits the admission of unvaccinated children into the public school. House Bill No. 86, an act to regulate the practice of chiropody in the state, still lies on the speaker's table. House Bill 173 is the same as Senate Bill 214, just referred to. The State Board of Health has sent a copy of these bills, regulating the practice of osteopathy, to the secretaries of all the medical societies in the state.

Chicago

New Step in Health Fight.—Health Commissioner Evans has ordered placards placed in every house where there is diphtheria, typhoid fever, scarlet fever, or other infectious disease, and as many other homes as possible, giving concise and plain hygienic instructions in cases of communicable diseases.

Fresh-Air Hospital Incorporated.—Papers of incorporation for an institution to be known as the Chicago Fresh-Air Hospital, to be conducted in Cook county without pecuniary benefit, were filed February 26 at Springfield. Dr. Albert J. Ochsner and Ethan A. Gray appear as promoters. A tract of twenty acres is to be chosen immediately as a site for the institution.

Health Department Appropriation.—As a result of a conference which took place February 25, between the health commissioner and the city council, it is hoped that the appropriation of $636,102, asked for the health department, will be saved intact. The health commissioner called attention to the fact that, although the council last year appropriated $835,204 for this purpose, the department had spent only $606,410.

INDIANA

Personal.—Dr. James M. Pinkston, Holton, has been elected coroner of Ripley county.——Dr. David C. Roney Milan, is spending this month and April in Florida.——Dr. Russel T. Olmstead, Versailles, has moved to Milan.——Dr. William G. Ralston, Evansville, has just celebrated his ninetieth birthday.

In the Hands of the Law.—Dr. J. W. Hartsog, Fort Wayne is said to have been fined $25 recently for practicing in Columbia City without a license.——In the case of Orland C. Brown arrested recently at Logansport at the instance of the Cass County Medical Society, charged with selling medicine without a license and released February 15, he was rearrested the same day on other charges filed by the society, and is said to have been taken to jail to await trial.——A magnetic healer of Logansport, named Charles Kerns, is said to have been arrested at Walton on charges filed by the Cass County Medical Society of practicing medicine without a license.——In the case of Jesse A. St. John, an itinerant, charged at Covington with practicing medicine without a license, the jury disagreed.

MARYLAND

Hospital Report.—The eleventh annual report of the Peninsular General Hospital, Salisbury, for 1908, shows that 636 patients were treated during the year, and that there were 308 operations, 90 of which were for appendicitis.

Correction.—The item in THE JOURNAL of February 13, regarding Dr. Gordon T. Atkinson is not correct. Dr. Atkinson, himself, is well and in active practice, and it was a patient of his who was announced as ill with bulbar paralysis.

Antituberculosis Association Formed.—As the result of the tuberculosis exhibit made by the Maryland Association for the Prevention and Relief of Tuberculosis at Snow Hill in February, a local association has been formed in that place, under the presidency of Senator John W. Smith. Funds are being collected and a visiting nurse has been employed.

Personal.—Surgeon Charles F. Stokes, U. S. Navy, has been assigned to temporary duty as head of the medical department of the U. S. Naval Academy, Annapolis.——The home of Dr. Edward A. Wareham, Hagerstown, was destroyed by fire February 4, entailing a loss of $20,000, partially covered by insurance.——Dr. Frank H. Hedges, Frederick, was seriously injured in a runaway accident February 5.

Baltimore

Hopkins' Day Exercises.—At the Hopkins' Day exercises, February 22, Dr. William H. Welch announced that the gift of Mr. Henry Phipps to Johns Hopkins Medical School and Hospital for the advancement of psychiatry already amounts to more than $1,000,000, and that Mr. Phipps desires the work to go on at his expense.

Invalid Children's Home Unites with Hospital.—The Harriet Lane Home for Children has united with Johns Hopkins Hospital for a term of twenty years, the hospital furnishing the ground, physicians, nurses and maintenance, and the home erecting the building and appointing the physician in chief and head nurse. The fund for the charity amounts to about $500,000.

Personal.—Dr. Claude van Bibber has been confined to his house for several weeks as the result of a fall on the ice.——Dr. William H. Welch was the guest of honor at a banquet of the Nu Sigma Nu February 20, and had conferred on him the honorary degree of the fraternity.——Dr. Harry Adler recently fractured his forearm in an automobile accident.——Dr. H. H. Esker, chief resident physician of Bayview Asylum, has been seriously ill with septicemia, following an operation wound.

Journal Club Meeting.—The Book and Journal Club held its sixth annual meeting, February 23, when Dr. William H. Welch spoke on the club and its object and Charles L. Dana, New York City, read a paper on "Canticles of the Early Renaissance Anatomists." Dr. H. Barton Jacobs was re-elected president, and Dr. Joseph A. Chatard was elected secretary, vice Dr. W. Royal Stokes, who declined re-election. The object of the club is to provide new books for the library of the Medical and Chirurgical Faculty of Maryland.

MINNESOTA

Society Meetings.—The annual meeting of Red River Valley Medical Association was held in Crookston January 6, and the following officers were elected: President, Dr. Halvor Holte, Crookston; vice-president, Dr. Theodore Bratrud, Warren; secretary-treasurer, Dr. H. E. Nelson, Crookston; censors, Drs. Henry C. Stuhr, Argyle, Israel Lemieux, Red Lake Falls, and Charles H. Denniston, Crookston; delegate to the state society, Dr. Charles E. Dampier, Crookston, and alternate, Dr. George S. Wattam, Warren.——The annual meeting of the Southwestern Minnesota Medical Society was held in Pipestone, January 22. Dr. Alexander H. Brown, Pipestone, was elected president; Dr. Leon A. Williams, Slayton, vice-president; Dr. Emil King, Fulda, secretary-treasurer, and Dr. Alfred E. Spaulding, Luverne, censor (re-elected). In the evening Dr. Joseph N. McCormack delivered a lecture on "Health and How to Secure It."——Washington County Medical Society, at its annual meeting, held in Stillwater January 12, elected the following officers: President, Dr. Ernest E. Wells, Stillwater; vice-presidents, Dr. Wade R. Humphrey, Stillwater, first vice-president and delegate to the state asso- secretary-treasurer, Dr. Frank G. Landeen, Stillwater; censor,

Dr. Demeter Kalinoff, Stillwater, and alternate delegate to the state association, Dr. Edgar O'B. Freligh, Stillwater.——At the annual meeting of Ramsey County Medical Society, held in St. Paul January 25, it was announced that by reason of the sale of catgut prepared under the direction of the society, and the profit from the publication of the *St. Paul Medical Journal*, the building fund had reached $20,000. Dr. Arnold Schwyzer was elected president; Dr. Ethelbert F. Geer, vice-president; Dr. Frederick Leavitt, secretary-treasurer; and Dr. William Davis, member of the editing and publishing committee, all of St. Paul.——At the annual meeting of the Clay-Becker County Medical Society, held January 25, in Moorhead, Dr. William H. Aborn, Hawley, was elected president; Dr. Thrond S. Egge, Moorhead, vice-president; Dr. Edgar R. Barton, Frazee, secretary-treasurer; Dr. William J. Awty, Moorhead, delegate to the state society, and Dr. Frank H. Alexander, Barnesville, alternate.——At the annual meeting of the Park Region District and County Medical Society, held at Fergus Falls January 16, the following officers were elected: Dr. John A. Freeborn, Fergus Falls, president; Drs. Philip G. Cowing, Ashby, and A. Mason Randall, Underwood, vice-presidents; and Dr. Otto M. Haugan, Fergus Falls, secretary-treasurer.——The election of officers of the Upper Mississippi Medical Association, held in Brainerd January 12, resulted as follows: President, Dr. Oliver T. Batcheller, Brainerd; vice-president, Dr. Frank H. Knickerbocker, Staples, secretary, Dr. George H. Lowthain, Akeley, and treasurer, Dr. Paul E. Kenyon, Wadena.——Winona County Medical Society, at its annual meeting January 5, elected Dr. Charles P. Robbins president and delegate to the state medical society; Dr. George L. Gates, vice-president; Dr. Hugh F. McGaughey, secretary; Dr. Leland H. Munger, treasurer, all of Winona; Dr. Frederick H. Rollins, St. Charles, censor, and Dr. Hans M. Lichtenstein, Winona, alternate delegate to the state society.——The following officers were elected by Goodhue County Medical Society, at Red Wing, January 8: President and delegate to the state society, Dr. Hiram E. Conley, Cannon Falls; vice-president and alternate delegate, Dr. Frank W. Dimmitt, Red Wing; secretary-treasurer, Dr. Alonzo T. Conley, Cannon Falls; and censors, Drs. Alvah W. Jones and Myron W. Smith, Red Wing.——Dr. Adolph O. Bjelland, Mankato, has been elected president; Dr. Henry B. Grimes, Lake Crystal, vice-president; Dr. Thomas C. Kelly, Mankato, secretary; Dr. Lida Osborn, Mankato, treasurer; and Dr. John S. Holbrook, Mankato, censor, of the Blue Earth County Medical Society.

MISSOURI

Personal.—Drs. George F. Hamel, H. M. Roberson, R. H. Fox, and A. M. Fortney of the staff of the Missouri Pacific Hospital, Kansas City, have resigned.——Dr. William P. Cutler, Kansas City, has been appointed state dairy and food commissioner.

Academy of Medicine Organized.—A number of physicians of St. Joseph met February 3 and organized an academy of medicine on lines similar to societies of the same name in other cities. The following officers were elected: Dr. Jacob Geiger, president; Dr. Albert L. Gray, vice-president, and Dr. John M. Bell, secretary.

The Smallpox Situation in Liberty.—The smallpox situation in Liberty is much improved. Under date of February 22 it was reported that no new cases had been noted for two days; that 50 per cent. of the patients had been dismissed from quarantine, and that the schools, churches and William Jewell College were planning to reopen early in the week.

St. Louis

Physician Acquitted.—In the case of Dr. Charles O. Wright, charged by a mail carrier with obtaining money under false pretenses, Judge Fisher directed the jury to acquit the defendant, February 16.

Personal.—Dr. Edward C. Beck was badly bruised and cut in a street car accident February 11.——Dr. Lee H. Monroe, senior physician of the staff of the City Hospital, has resigned to become a member of the staff of the Missouri Pacific Hospital.

Medicolegal Society Formed.—The Medicolegal Society has adopted a constitution and by-laws and applied for incorporation. The following officers have been elected: President, A. N. Sager; vice-president, Prof. N. B. Carson; secretary, Dr. Henry J. Scherck, and treasurer, Loomis C. Johnson.

Recommendation of Publication Committee.—At a conference of the publication committee, the editor of the *Weekly Bulletin*, and section editors the following recommendations were adopted: That matter to appear in the *Bulletin* should be more promptly reported; that section editors shall be made assistant editors of the *Bulletin*; that section editors shall share with editors the duty of collecting news items of interest to the members of the society, and to the medical profession at large; and that such matter shall appear in the *Bulletin* as a regular feature.

NEW YORK

Investigation of the Milk Industry.—A bill has been introduced into the legislature providing for an appropriation of $20,000 with which to enable the agricultural commission to investigate the milk industry and its cost and care, especially in relation to the New York City milk supply from up state.

To Aid Incipient Consumptives.—A bill has been introduced into the legislature on the recommendation of the state fiscal supervisor to appropriate $175,000 for improvements at the State Hospital for the Treatment of Incipient Tuberculosis at Raybrook. The bill proposes to double the accommodations so as to make the hospital's minimum capacity 300 patients.

New York City

Harvey Society Lecture.—The ninth and last lecture of the Harvey Society lectures is by Dr. C. B. Davenport, director of the Institution for Experimental Evolution, Cold Springs Harbor, N. Y., March 6, at the Academy of Medicine, 17 West Forty-third street, on "Heredity in Man."

Operating Pavilion Opened.—The Gibb operating pavilion of the New York City Home for the Aged and Infirm on Blackwell's Island was opened on February 24. The building was named in honor of Dr. W. Travers Gibb, chief surgeon of the home. The cost of the building and equipment was $24,000. Dr. Gibb performed the first operation in the building on the following day.

Changes in the Ambulance Service.—The abandonment of the ambulance service of Roosevelt Hospital has necessitated a division of the territory covered by that service. The New York Hospital will cover the territory from Twenty-seventh street to Forty-second street, the Flower Hospital from Forty-second street to Seventy-sixth street, and the J. Hood Wright Hospital from Eighty-sixth street north.

Assignments of Gas Rebates.—Claims for gas rebates have been received in increasingly large numbers by the committee on the prevention of tuberculosis of the Charity Organization Society. The committee reports that auxiliary committees in every walk of life will be formed, and that the employés of each large factory and department store will be organized into groups in a concentrated effort to prevent tuberculosis.

Alumni Dinner.—The alumni of the College of Physicians and Surgeons of Columbia University celebrated the fiftieth anniversary of the founding of their association on March 2 by a dinner at Sherry's. Prof. Samuel W. Lambert, dean of the college and president of the association, presided. Among the speakers were Dr. Nicholas Murray Buttler, Dr. Seth Low, Dr. H. A. Christian of Harvard Medical School, Dr. William M. Polk of Cornell University Medical School, and Prof. John G. Curtis of the College of Physicians and Surgeons.

Sanitary Homes for Consumptives.—Mrs. W. K. Vanderbilt has purchased a site and has had plans prepared for the construction of three model tenements for poor consumptives which will cost $1,000,000. They will be located on East Seventy-seventh and Seventy-eighth streets and will be a valuable extension to the facilities of the tuberculosis clinic of the Presbyterian Hospital. There will be accommodations for from 375 to 400 families in comparatively inexpensive quarters and with surroundings especially favorable for consumptives. While the work has been undertaken in the interests of philanthropy it is estimated that the investment will yield a moderate return. All the rooms will open outdoors and there will be no dark halls, every apartment being entered from an outside stairway. The roof will be especially equipped and in fact all the advantages of a sanatorium will be supplied except that the families will provide their own food.

NORTH DAKOTA

Society Meetings.—At the annual meeting of the Northwestern District Medical Association, held in Minot January 19, the following officers were elected: President, Dr. Henry O. Windell, Williston; vice-president, Dr. E. M. Ramson, Minot; secretary-treasurer, Dr. R. W. Pence, Minot; censors, Drs. James O. Newlove, Minot, Josiah S. Davies, Granville, and Harry Ehernfeld, Anamose; delegate to the state society, Drs. Josiah S. Davies, Granville, and James D. Windell,

Minot, and alternates, Drs. Thomas P. Martin, Towner, and Date K. Thyng, Willow City.——The Southern District Medical Society of North Dakota held its annual meeting January 29, at Monango. Dr. Ferdinand G. Benn, Kulm, was elected president; Dr. Bayard E. Ryder, Oakes, vice-president; Dr. Howard W. Barbour, Edgeley, secretary-treasurer; Dr. Gustav A. Mathews, Napoleon, censor, and Dr. George B. Ribble, LaMoure, delegate to the state society. The next meeting will be held at Kulm, May 4.——Stuttsman County Medical Association, at its annual meeting in Jamestown, elected Dr. Adolphus W. Gust, Jamestown, president; Dr. W. Albert Gerrish, Enderlin, vice-president; Dr. Miller, secretary-treasurer, and Dr. Helena K. Wink, Jamestown, trustee.

OHIO

Tuberculosis Hospital.—In compliance with the law recently enacted by the General Assembly, a tuberculosis hospital is to be established for Warren county, south of Lebanon, where an option has been secured on an eligible piece of property.

Personal.—Dr. Sherman Leach, Columbus, is seriously ill with septicemia due to an operation wound.——Dr. Frank J. J. Lehmann, Toledo, has been appointed assistant surgeon in the naval brigade.——Dr. Sterling B. Taylor has begun his work as health officer of Columbus.——Dr. H. F. Colby has been re-elected president; Dr. Elmer E. Kimmel has been elected treasurer; Dr. Alonzo H. Dunham, a member of the obstetric staff, and Dr. William E. Alleman, supervisor of anesthetics in the Miami Valley Hospital, Dayton.

Annual Report of the Registration Board.—The president of the State Board of Medical Registration and Examination, in his annual report to the governor, calls attention to the efforts of the board to exclude from the practice of medicine all persons morally and professionally unworthy. The state has effected reciprocity arangements with fifteen states. During the year 174 licenses were granted, and 34 from other states were recognized. Among those licensed were 6 osteopaths. Four certificates were revoked during the year; 13 midwives were licensed; 14 prosecutions were started, and 288 certificates of admission to medical colleges were issued.

Success in Prosecution of Evildoers.—Mark Klein, a druggist of Cleveland, charged on several counts with the illegal selling of cocain, is said to have pleaded guilty to all charges, waived proceedings in error, and offered to pay the fine of $500, throwing himself on the mercy of the court. The court accepted the plea of guilty and suspended the fine.——The governor and attorney general, January 28, declined to reverse the decision of the former governor and attorney general which upheld the State Board of Medical Registration and Examination in its revocation of the certificate of Dr. James A. Ambrose, Dayton, convicted of malpractice, and later pardoned by Governor Harris.——The suit brought at the instance of the Montgomery County Medical Society against Louis O. Black, Dayton, for practicing medicine without a license, is said to have been decided against the defendant, who was fined $25.

Cincinnati

The Eichberg Professorship.—A fund of $50,000, one-half the amount required, has been raised by professors of the University of Cincinnati to establish a chair of physiology in the university in memory of the late Dr. Joseph Eichberg.

Clinic Opened at Settlement.—At a meeting held February 1, at the University Settlement, it was announced that a general medical clinic would be opened in a short time, and later on a clinic for the treatment of diseases of the eye, ear, nose and throat. Dr. Frances M. Hollingshead is a member of the board of trustees of the settlement.

Personal.—Dr. Kenneth L. Weber has been appointed assistant physician at the State Hospital for the Insane, Athens.——Dr. Julius H. Eichberg on February 23, had a cataract removed from his right eye, at St. Elizabeth's Hospital, Dayton.——Dr. G. H. Astler, who was ordered to Santa Fe, N. M., for his health last November, is said to have taken a turn for the better and to be convalescent.

PENNSYLVANIA

Adulterated Drug Bill.—On February 25, the house health and sanitation committee reported out favorably on the Campbell drug bill, which is designed to prevent the manufacture and sale of adulterated or misbranded drugs. This measure is being pushed by the State Pharmaceutical board.

Physicians Support Medical Bill.—Four hundred physicians of Philadelphia visited Harrisburg March 2 and argued in favor of the proposed Shreve-Herbst medical bill, which was considered by the senate committee on health and sanitation. The delegation was reinforced by similar delegations from almost every town and city in the state.

For Poor Consumptives.—A bill was introduced in the House of Representatives by Representative Daniel J. Shern of Philadelphia, February 22, carrying an appropriation of $1,000,000, for two years, to encourage all hospitals to devote attention to tuberculosis patients. The bill provides that all hospitals having beds for persons afflicted with tuberculosis, shall be entitled to receive one dollar per day from the state for each bed so maintained, the payment to be made on the approval of the auditor general. This measure, it is said, has the approval of the governor.

Rights of a Patient.—Judge Swartz has handed down an opinion of interest in a suit brought by Dr. William J. Ashenfelter of Pottstown, against a patient for $100 for services alleged to have been rendered. The claim was disallowed. The patient was taken to the hospital after being seriously injured in a railroad accident. Dr. Ashenfelter was the surgeon in charge at the time and as such he amputated a limb. The patient arranged with the hospital authorities for a private room and it was agreed that the compensation for care, nursing and medical attention should be $10 a week. The court said without notice of some kind the patient had a right to assume that he was paying for all the services he received when he paid the sum due under his contract to the hospital. If he had secured the services of a surgeon not on the hospital staff, a different question would arise.

Philadelphia

Beriberi at Quarantine.—The steamship *St. Helena* was placed under quarantine by the Board of Health at Point Breeze, February 27. The cause of this action was due to the death of a Chinese sailor, who is supposed to have suffered from beriberi.

Tuberculosis Exhibition.—The International Tuberculosis Exhibition is being visited by great concourses of people daily. The average daily attendance exceeds more than 10,000 and the total number of visits made since the exhibition opened two weeks ago aggregates 151,095.

Anonymous Gift for University.—At the university day exercises, February 22, Provost C. C. Harrison made the announcement that an anonymous gift of $200,000 had been made to the medical department. It was stated that this sum was secured through the efforts of Dr. John H. Musser, professor of clinical medicine and that the money is to be used to endow a department of research in medicine.

TENNESSEE

Dr. Happel Goes to Baltimore for Treatment.—Dr. T. J. Happel, Trenton, member of the Board of Trustees of the American Medical Association and secretary of the State Board of Medical Examiners, who has been suffering more or less at intervals from an obstinate nervous affection, is in Baltimore for treatment.

VIRGINIA

Sanatorium Reorganized.—Ironville Tuberculosis Sanatorium has been reorganized and put in charge of Dr. Walter F. Wood, former superintendent of the White Haven (Pa.) Sanatorium.

Wells Must Be Closed.—The health department of Richmond has secured a verdict in its favor in a test case in virtue of which more than 400 wells of the city which are said to be a constant menace to public health, will be condemned and filled.

Lynchburg Gets Epileptic Colony.—The State Hospital Board has decided to purchase an estate in Amherst county opposite Lynchburg, as a site for the proposed State Epileptic Colony, and to recommend the sale of the property devised to the colony by the late Mr. Murkland. There are 1,000 acres in the tract, of which 184 are bottom land, 316 pasture, and the remainder original and second growth timber. The buildings already on the property are a thirteen-room brick building, a four-room brick cottage, granary and stables, twenty-three frame cottages and other buildings.

GENERAL

To Study Alcohol and Narcotics.—The American Society for the Study of Alcohol and Other Narcotics, which was organized in 1870, will hold its annual meeting at the Raleigh Hotel, Washington, D. C., March 17-19. Dr. T. D. Crothers,

Hartford, Conn., is secretary of the society, and a general invitation is extended by him to all persons interested.

Railway Surgeons Elect.—At the annual meeting of the Association of Surgeons of the Illinois Central Railway, held in Memphis, Dr. John E. Owens, Chicago, was re-elected president, Dr. William F. Grinstead, Cairo, was elected first vice-president, Dr. William B. Rogers, Memphis, Tenn., second vice-president, and Dr. Charles B. Fry, Mattoon, secretary-treasurer.

First Graduates at Manila.—The first class of physicians turned out under the American rule was graduated from the Philippine Medical School, Manila, February 27. Dr. P. C. Freer, dean of the faculty of the college, presided and addresses were delivered by Commissioners D. C. Worcester and Newton W. Gilbert, and Rafael Palma, a member of the Philippine assembly.

Society Meeting.—The Tri-State Medical Association of the Carolinas and Virginia held its annual meeting in Charleston, S. C., February 16 and 17. The following officers were elected: President, Dr. Joseph A. White, Richmond, Va.; vice-presidents, Drs. Le Grand Guerry, Columbia, S. C.; J. Wilkinson Jervey, Greenville, S. C., and William W. McKenzie, Salisbury, N. C., and secretary-treasurer, Dr. P. Howell Way, Waynesville, N. C. The next meeting of the society will be held in Richmond.

Smallpox in Central America.—Drs. Aurelio A. Dutari and C. A. Hearne recently made an investigation of the smallpox condition in the province of San Carlos, Panama. They found 18 cases of variola, benign in character and with no mortality. They state that the disease is practically endemic several miles from the coast in both the San Carlos and Chamo districts.——Dispatches from New Orleans papers allege that 12,000 cases of smallpox are reported in Guatemala City and its environs.——Smallpox is reported to be epidemic at Quintana Rio, at Teran, Nueva Leon and Jalapa, Mexico.

Fenger Memorial Fund.—The council of the Chicago Medical Society on May 8, 1906, provided for the incorporation of an association in memory of Dr. Charles Fenger, to secure a fund by voluntary contributions of individuals, to be safely invested, and the income to be devoted to medical research. The fund now contains a little more than $7,000. Payment of $25 entitles to active membership in the Association and $10 to associate membership. The treasurer of the fund, Dr. Coleman G. Buford, 100 State street, is sending a circular letter to physicians in northern Illinois, Wisconsin, Michigan, Indiana, and Iowa, which will, it is hoped, increase the interest of the profession in general in the praiseworthy work undertaken by the association.

FOREIGN

Norwegian Medical Association.—The thirteenth congress of the national medical association of Norway is to be held this year at Bergen in the second week of August, just before the International Leprosy Congress, which is announced for August 15 to 19 at the same place.

The Tolstoi Prize.—The Russian Academy of Sciences has awarded a prize of 1,000 rubles ($510) endowed by Count D. Tolstoi to Dr. J. Sawadskij for his recent research on the "Inhibition and Suspension of the Conditional Reflexes." His work was done in Pawlow's laboratory.

Hungarian Medical Press Association.—The medical journals of Hungary have united in a national association now affiliated with the International Press Association. Professor Lenhossek is the president of the national organization, which is modeled after the German Press Association.

International Antiquackery Association.—The Netherlands national association against quackery has assumed the office of being the central station for the international antiquackery movement, bearing the expenses connected therewith. It has also affiliated with the central office of the society for repression of the illegal practice of medicine, whose secretary is Dr. Levassort, 2 Place des Vosges, Paris. All these organizations are busily at work preparing for the International Antiquackery Congress at Paris next year.

The Health of Rio de Janeiro in 1907.—The official statistics state that the mortality was 20.76, the natality 25.1, and the marriages 5.77 per thousand for a population of 636,018. There were 39 deaths from yellow fever and 73 from bubonic plague in 172 cases of the latter received in the hospital. The morbidity was still further reduced in 1908. The stamping out of yellow fever is the triumph of the local authorities, and the *Brazil Medico* is collecting subscriptions for a gold medal to be presented to Oswaldo Cruz, the chief of the board of public health, to whose energy is attributed the eradication of yellow fever.

The German Congress for Internal Medicine.—The twenty-sixth congress for internal medicine is to be held at Wiesbaden, April 19-22, with Professor Schultze, of Bonn, in the chair. Among the questions to be discussed are "Mineral Metabolism in Clinical Pathology," "Therapeutic Deprivation of Salt," and "Tests of the Sensory Functions," the latter to be presented by Head of London. The secretary is Dr. E. Pfeiffer, Parkstrasse 13, Wiesbaden. There will also be an exhibition in connection with the congress. The date is arranged to follow the surgical congress at Berlin.

Censor for Medical Advertising.—The authorities in Russia have organized a censorship for medical advertising, including both proprietaries, apparatus, drugs, hygienic and cosmetic remedies and the professional cards of physicians, dentists, midwives, masseurs and druggists, health resorts and mineral waters. Every advertisement of this kind must be submitted to the censor before publication, and no anticonceptional remedies and apparatus are allowed to be advertised at all. Exaggerated claims will not be permitted nor proprietaries with names suggesting the affection for which they are advocated, like "eczematin," etc. An autocratic government may possibly have some good features after all.

German Congress for Urology.—In addition to the Roentgen, Orthopedic and Surgical congresses to be held at Berlin in turn between April 13 and 17, the second congress of the German Urological Society will follow close on these gatherings, opening April 18 and continuing for four days. The first addresses are to be on the subject, "Urology and Gynecology," to be presented by Stoeckel of Marburg and Wertheim of Vienna. Next follow addresses by von Fritsch of Vienna and Barth of Danzig on "Suppurative, Non-tuberculous Affections of the Kidneys," and by Casper of Berlin and Zuckerkandl of Vienna on "Bladder Tumors." An exhibit of urologic appliances, etc., is to be a feature of the congress. For further particulars address the secretary, Dr. Wossidlo, Victoriastr. 19, Berlin W.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Feb. 20, 1909.

Bernard Shaw on Physicians: Socialistic Criticism of the Profession

Mr. Bernard Shaw is always original, and though he revels in the paradox and finds our most cherished institutions only subjects for his satire, he has to be taken seriously. Amid his extravagant and socialistic views will often be found sound criticism. At the Medico-Legal Society he opened a discussion on the "Socialist Criticism of the Medical Profession." He said that the physician at the present day had practically been driven into the position of a private tradesman. The medical profession had never accepted that position as a matter of theory, but its members had been forced into it as a matter of fact. The average physician was abjectly poor as the result of competition. The attitude of socialism toward a poor man was that he was a bad and dangerous person, and when the physician was poor he was particularly dangerous. It was not possible for him to carry out those hygienic measures which he knew to be necessary, and he had to pander to the foibles and ignorance of patients so as not to lose them. The ordinary patient demanded cheap cures, and to gratify him the physician had to perpetrate a swindle. The medical profession must be socialized because physicians were more and more driven to claim powers over the liberty of the ordinary man which could not possibly be entrusted to any private body. If there was to be compulsory hygiene and the people were to be compelled to do this, that and the other for the health of the community, there must be democratic control, otherwise it would become an intolerable tyranny. No doubt there would be private practitioners even after the physician had been placed in the position of public officer of health. Both the physician and the patient would always have the alternative of being delivered over to the tender mercies of private enterprise. But if the physician found the position of having to depend on the caprice and ignorance of private persons intolerable, he would, under socialism, get into an independent position in the public service.

In the discussion which followed, Sir Victor Horsley said that it was reserved for the British Medical Association in 1909 to attempt to organize their profession to ensure that

the practitioner should obtain a living wage. He had no shame in being called a tradesman. He sold his knowledge and in that respect he was a tradesman, he supposed. He hoped that he was an honorable tradesman, and he believed that the appanage of honorable conduct stamped him as a professional man. Mr. Shaw had told them that by nationalizing the profession the physician would be put in a more honorable position and that the public would be assured of better treatment. He believed that most firmly with Mr. Shaw. All that they had to do was to see that the profession did not lose by the transformation.

Proposed Medical Library Association

At a meeting held at Leeds it has been decided to form an Association of Medical Libraries, and a provisional committee was appointed to draw up a constitution and rules. Professor Osler was appointed first president and Prof. Walker Hall and Mr. E. A. Clayton, librarian of the Manchester Medical Society, temporary secretaries. The project is an entirely new departure in this country, as no co-ordination has ever existed between medical libraries.

Irish and Scotch Diplomates and English Hospital Appointments

At most of the great English hospitals there is a rule requiring candidates for appointment as surgeons to possess the fellowship of the Royal College of Surgeons of England, and for the appointment as physicians the membership of the Royal College of Physicians. The object is to ensure that candidates have the highest qualifications possible, and no difficulty exists in obtaining candidates with these qualifications. In England a large number of Irishmen and Scotchmen practice under the diplomas of their respective countries and for long they have proclaimed that it is a grievance and even an injustice that they should be excluded from competition for English hospital appointments. On three occasions the British Medical Association has passed a resolution condemning the system, but nothing has ever resulted. A meeting has been held in London of Irish and Scotch diplomates, at which the presidents of the Royal Colleges of Physicians and Surgeons in Ireland attended, to discuss the subject. The speakers alleged that the English colleges possessed an unfair monopoly in the hospital appointments, and that the qualifications of the Irish and Scotch colleges were just as good and obtained by just as stringent examinations. This last statement will not receive general acceptance. It is generally believed that the fellowship of the Royal College of Surgeons of England is the first surgical diploma in the world, and with good reason. When English hospital committees insist on candidates possessing it they are not acting in any spirit of national prejudice, but merely demanding that candidates shall possess the highest qualification obtainable. It is perfectly open to Irishmen and Scotchmen in England who desire to become hospital surgeons to obtain this diploma if they possess the requisite knowledge, and many of them do possess it and have been appointed on the staffs of English hospitals. Indeed, with their usual enterprise the Scotch have obtained such positions out of all proportion to their number.

British Medical Benevolent Fund

Seventy-three years ago there was founded a very useful institution, the British Medical Benevolent Fund, for the object of relieving physicians and their families under severe and urgent distress caused by sickness, accident or other calamity. It was not intended to be a provident or benefit society, but a charitable institution open to every one, the only qualification being poverty and distress. The persons who come for relief are divided into two classes. Those whose distress is temporary are relieved by grants of money, and those whose distress is permanent through ill health or old age are made annuitants. The grants of money are made to distressed physicians, their widows and orphans, and the annuities are provided for such as have reached the age of 60. The number of annuitants last year was 124 and the sum distributed amounted to $12,000. The value of each annuity is $100 and in some cases $130. The money for these annuities is obtained from investments. On the other hand, grants varying from $25 to $100 are made from donations and subscriptions. Last year over $10,000 was thus distributed, but, unfortunately, this sum fell short of relieving many urgent cases. Addressing the annual meeting of the fund, the Bishop of Oxford claimed a certain right to speak, as his father (the late Sir James Paget) was for many years its president. He said there was a clear and urgent need for such an institution. There was no profession in which a man was compelled, without any choice of his own, to run greater risk of impoverishment for himself and his family than in the medical. By the time a man qualified he had spent a large sum, and from the very first his outlay was considerable for the keeping up of appearances. After that everything depended on his health, without which his other assets, such as education and skill, were useless.

The Oldest Woman Physician in England

The oldest woman physician in England and the first woman to take a medical qualification and be placed on the medical register, Dr. Elizabeth Blackwell, has celebrated her eighty-eighth birthday at Hastings. She received numerous congratulations on the event from all parts of England and America. Born in Bristol, her life epitomises the long struggle of women for admission into the medical profession in this country. Her inspiration for the revolution she wrought in breaking down one of the strongest prejudices in this very conservative country was probably largely derived from her American training. As long ago as 1832 her family went to America, where she became a school teacher. She began her preliminary studies in Asheville, North Carolina, in 1845. She had some difficulty in entering a medical school, as the universities of Philadelphia and of New York refused to consider her application. At Geneva, New York, she was more fortunate and one of her most valued possessions is the copy of the resolution passed in October, 1847, when it was unanimously agreed: "That one of the radical principles of a republican government is the universal education of both sexes; that in every branch of scientific education the door should be open equally to all, that the application of Elizabeth Blackwell to become a member of our class meets our entire approval." She pursued her studies undisturbed, but was regarded with curiosity by her fellow students and the townspeople. On Jan. 25, 1849, she was graduated. She returned to Philadelphia and began to practice in the hospital wards of the Blockley Almshouses. To gain further experience she came to Europe and spent some months in La Maternité, Paris, and then came to London, where she obtained from the late Sir James Paget the valued privilege of studying in the wards of St. Bartholomew's hospital. In 1859 Dr. Blackwell was the first woman whose name was placed on the British Medical Register.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Feb. 18, 1909.

The Causes of Death in France

Until recently France lacked mortality statistics except for the cities, and even these date only from 1886. M. Mirman, director of the *Assistance Publique* and public hygiene, recently ordered the statistics to be compiled for the whole of France, and the results have just been published. There were in 1906, with a population of 39,252,245, a total of 778,400 deaths, of which 354,667 occurred after 60 years of age, and 199,237 in the first year of life. Senile debility is assigned the principal rôle, being given as the cause of 103,374 deaths. Next come inflammatory affections of the respiratory apparatus (pneumonia, bronchitis, etc.). These are responsible for 99,839 deaths, almost as many as senile debility. It is, moreover, almost exclusively among old people and young children that the respiratory affections produce fatal results. Then follows tuberculosis (phthisis and other tuberculous conditions) which caused 87,091 deaths. Although this figure is somewhat below the truth, we are, it appears, nevertheless far enough removed from the pessimistic assertion which has been repeated for some years, that tuberculosis causes in France 150,000 deaths per annum! The comparative statistics arranged by Dr. Jacques Bertillon, chief of the Paris department of statistics, show clearly that in so far as the mortality from tuberculosis is concerned, the situation in France compares favorably with that of other European countries. Here is a table of deaths, per 100,000 inhabitants, from tuberculosis yearly during the period from 1895 to 1900.

Austria	340	Scotland	234
Hungary	328	Wurtemberg	230
Bavaria	292	Saxony	221
Ireland	282	France (1906)	221
Baden	274	Denmark	216
Finland	272	Prussia	208
Norway	249	England	190
Belgium	248	Italy	171
Switzerland	246		

It is thus seen that France follows almost immediately after Italy and England, countries extremely favored in regard to tuberculosis, England by its wealth and Italy by its marvelous climate.

But if France as a whole is relatively favored in this respect, it must be admitted that Paris, of all the great capitals, is the one in which tuberculosis is most prevalent (458 deaths per 100,000 inhabitants during the past year) and in which it is being most slowly reduced.

Beside the three great causes of death—senility, inflammatory conditions of the respiratory apparatus, and tuberculosis—which furnish each about 100,000 deaths, there are three others which are one-half as fatal, namely: organic heart diseases, with 49,989 deaths; cerebral hemorrhage and its sequelæ with 47,466 deaths; infantile diarrhea with 41,699 deaths. In a third group must be classed three other causes of death which are responsible for about one-half the number of deaths as the preceding causes. These are: Cancer, with 27,306 deaths; congenital debility, which has carried off 24,421 new-born infants; and violence (including suicide), which has caused the death of 26,259 persons.

In comparison with these nine principal causes of death, the others count for very little. Typhoid fever, for instance, caused only 5,453 deaths; measles, whooping cough, and diphtheria have claimed each a little over 3,000 victims; scarlet fever only 907.

A Day of Rest for Physicians

For some time various medical organizations have been studying measures for securing a weekly day of rest for the physician, but by reason of the practical difficulties that the question entails, their efforts have up to now been limited to the simple expression of wishes and to theoretical discussion. At last one of these organizations—the syndical section of the xvii arrondissement of Paris—has proved that the difficulties are not insurmountable. It has in short succeeded in organizing a roster of medical service, called the service of weekly rest, which leaves physicians free, while it respects the interests of patients by assuring them of such urgent attendance as they may need. This service is established on the following basis: The arrondissement or ward is divided into four districts and a list is made up in advance for as many Sundays or holidays as there are members of the syndicate in that district. The order of service is made by ballot for the first Sunday and for the following days in alphabetical order. The list of turns of service is placarded at the *mairie* and in the police stations of the ward, where it can be consulted by the public. Those applying at a physician's house are given a printed card headed with the title of the medical organization, with the date and the name and address of the physician taking the service for the day. The card also bears the legend that fees are to be paid in cash, and this is enforced as far as possible. If the physician on duty, summoned to a patient of a colleague in the syndicate, finds himself confronted by some surgical or obstetrical emergency, his fees are regulated by an amicable understanding with the interested colleague. The manner in which the physician interested shall be advised next day of the visit made to his patient is not decided; the medical organization has not thought it necessary to touch on this question in the regulations, feeling satisfied of the fraternal scrupulousness that will induce the physician on duty to write to his colleague as early as possible.

The Paris Medical Society

The three oldest medical associations in Paris, the Medical Society, the Medico-Chirurgical Society, and the Society of Practical Medicine and Surgery, have recently combined under the name of the "Société de Médecine de Paris." This new association held a special meeting February 3 to celebrate simultaneously its own inauguration and the centenary of the Society of Practical Medicine and Surgery, the youngest of the three amalgamated societies. M. Doumergue, minister of public instruction, presided. With him on the platform were the dean of the medical college, the chief of the university system, and many other leading men in the world of medicine.

The P. C. N.

In France the study of medicine is preceded by a preparatory year devoted to the obtaining of a certificate of physical, chemical and natural studies—the P. C. N. Those students who at present are preparing for this certificate are not affected by a recent decree to which I referred in one of my preceding letters (THE JOURNAL, Jan. 9, 1909, p. 145), reorganizing the medical studies properly so called, and fixing their duration at five years in place of four. It is officially stated that the new decree is not yet enforced, and probably will not be applied for two years, on account of the details of organization and finances.

The Sanitary Condition of Martinique

The minister of colonies has received from the governor of Martinique a cablegram announcing that the sanitary condition is satisfactory, and that the officials will be authorized to come down from the hill resorts by February 21. The measures of isolation and of night surveillance will be dispensed with for ships in the bay, but not for the steamboats of the Transatlantic Company, which are not yet authorized to come up alongside the quay.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Feb. 11, 1909.

The Call of Professor Minkowski to Breslau

Professor Minkowski of Greifswald has been called to fill the chair of internal medicine at Breslau left vacant by the transfer of Professor Strümpell to Vienna. Minkowski is well known for his work in the field of experimental pathology and for his researches on pancreatic diabetes in conjunction with von Mering. We had the opportunity to learn how excellent a lecturer Minkowski is on the occasion of a postgraduate course delivered in the Kaiserin Friedrich Haus, to which a number of distinguished foreign teachers were invited. It may well be assumed therefore that Minkowski will fill Strümpell's place satisfactorily. As I am informed, Minkowski himself is well pleased at the change since he was not well satisfied with the little university of Greifswald in Vorpommern. When he was called there three years ago he hailed the call with pleasure as a fulfillment of his long cherished wish to become a full professor. In spite of his worth and of his ambition, which was supported by his former teacher, the distinguished Professor Naunyn, he remained a long time in Strassburg as an assistant. The opinion has long prevailed that he was neglected by the faculties on account of his Jewish faith, and this idea was confirmed by what happened on his selection for the position at Greifswald. He went from Strassburg to Cologne as director of the medical department of the general hospital. On his removal to Greifswald he changed his religion, and the assumption is probably justified that this change had been made a condition of his appointment. According to the newspapers, Professor Pfeiffer from Königsberg, has already been chosen to succeed Flügge as future director of the hygienic institute at Breslau.

A German Radium Institute

The desire for a German institute for the investigation of radium is to be fulfilled sooner than we expected. A foreign philanthropist has donated the sum of 130,000 marks ($32,500) to the university of Heidelberg to found a radiologic institute. The institute is to be combined with the new building of the physical institute under the title of physico-radiologic institute, which will be under the direction of Lenard, the professor of physics, and will include in its scope not only biologic but also medical investigations carried on in connection with the clinics.

A German Central Committee for Care of School Children's Teeth

Early in February a meeting was held at the Kultusministerium (state department of education) at which a committee was formed to provide for dental treatment in the public schools and to promote the rational care of the teeth. The committee is to carry out its purpose by popular addresses and by the distribution of suitable literature on the care of the teeth as well as by introducing instruction on this subject into the schools. It seems to me that the school physicians and the dentists that have been appointed for many of the schools are fully able to carry out the work assigned to this committee. But the tendency to form committees with high-sounding names and ambitious plans is nearly as great with us as the disposition to organize societies. It is easier now than it used to be to get a reputation as a philanthropist. One needs only a humanitarian idea, and it is easy to get a few prominent men to help form a committee and then to make an appeal and bombard the papers with the new undertaking. To-day much money, time and strength

are being squandered under the battle-cry of humanity and philanthropy.

Woman's Hospital for Greater Berlin

Berlin has only one policlinic and private clinic conducted by women physicians, and there is as yet no large hospital under their charge. This alleged defect is now to be remedied; money for such a hospital has been collected among the women of Berlin. While it is yet uncertain whether the enterprise will be carried out, I think it probably will. There is sufficient enthusiasm among the leaders of the woman movement to set the mass of their followers in motion, and there are enough well-to-do women who can and will make sacrifices for the realization of this idea.

Hygienic Regulations for Working Women and Youths

At the end of last year a law was promulgated which ensures the following hygienic conditions: After the end of the day's work an uninterrupted rest period of at least 11 hours must be allowed youthful laborers and workwomen. Working women must not work longer than ten hours and must not be employed at night, from 8 p. m. till 6 a. m. Women must not be employed for a period of eight weeks at the time of confinement, and at least six weeks of this rest must follow the delivery. Women must not be employed in coke works nor in the transportation of building materials. Besides these restrictions, the federal council (Bundesrat) can forbid the employment of youths and women in any industry that is especially dangerous to health or morals.

Monument for Professor Mendel

A memorial to the distinguished nerve specialist and psychiatrist, Professor Mendel, is to be erected in Pankow, a suburb of Berlin, where he long resided. There is no doubt that sufficient contributions for a suitable monument can be collected, as Mendel was much beloved by his colleagues as well as by his numerous clientele.

Foreign Red Cross Medals

A swindle similar, but not quite so bad as the bogus Academia Fisico-chimica at Palermo which I have previously mentioned, is the fraud carried on in connection with the Japanese Red Cross medals. The impression was produced by advertisements of commercial agents that these medals were an official distinction, similar to the German Red Cross medals which are bestowed exclusively by the king. In reality, the Japanese society is a private institution which distributes membership medals and medals for merit on the payment of 25, 200, or 1,000 yen. (equivalent to $12.50, $100 or $500). Any one can obtain membership and a medal on the payment of the requisite contribution. The middlemen, of course, charge higher rates for obtaining the medals for their customers.

The Cholera in Russia

According to information given out by the Prussian government, the number of people who have been attacked with cholera since the beginning of the epidemic amounts to 30,157, of whom 14,253 died (about 50 per cent.). In St. Petersburg alone, 8,763 were attacked and 3,553 died.

Annual Report of the Great Hanseatic Insurance Society

The annual report of the "Landes-Versicherungs-Anstalt der Hansestädte" for the year 1907 is at hand. Since 1891 the society has expended over 7,000,000 marks for medical purposes and more than 900,000 in 1907, over half of which was paid out on account of tuberculosis. This society embraces Hamburg, Bremen and Lübeck.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Feb. 13, 1909.

Number of Physicians in Austria

The number of medical practitioners in Austria (in a population of 27,000,000) was 12,278 in 1908, according to official figures; that is, one practitioner for about 2,250 inhabitants—a fairly satisfactory ratio. The increase over 1907 was 2 per cent., which corresponds to the estimated increase in population of 2 per cent. per annum. Although the German-speaking population is only 39 per cent. of the whole, 60 per cent. of the practitioners work among Germans because of their superior social and financial position. The proportion of medical men to the population in Austrian cities varies between 1 to 560 in Prague, 1 to 700 in Vienna, which has nearly 3,000 practitioners for 2,000,000 population, 1 to 1,600 in Graz, and 1 to 1,500 in Zara. All practitioners except a few who have been in practice for a long time have the degree of M.D.; for thirty years this degree has been required of those seeking to practice.

The number of medical graduations corresponds to the number of students. The numbers of both have decreased considerably since 1894, when the seven Austrian universities were attended by 6,739 medical students, against 2,440 in 1909. In 1894, 1,088 degrees of M.D. were granted in Austria; in 1904 only 553. In the University of Vienna alone there were 323 degrees of M.D. granted in 1900; in 1908, only 157. At present, since the number of students and graduations corresponds to the annual increase in population, the prospects for medical men are not bad, especially in the country, where wealth is increasing and education becoming diffused.

Jubilee of Prof. von Eiselsberg

The present and former assistants and students of the director of the first surgical clinic in the Vienna General Hospital, Prof. von Eiselsberg, recently celebrated the twenty-fifth anniversary of his attaining the degree of M.D. A number of special scientific papers, prepared by the assistants of the professor and worked out during his professorship, were presented to him in the form of a *Festschrift*.

Lack of Antidiphtheritic Serum Due to Insufficient Stable-Room

In a report of the bureau of health attention was directed to the fact that the amount of antidiphtheritic serum was not sufficient to meet the demands of a possible epidemic. This report caused attacks on the management of the institute to be made by members of the city and national government. Professor Paltauf was then authorized to give the following explanation: Owing to the limited extent of the stabling available for the serum horses, not more than twenty animals can be kept for this purpose by the institute. Not all these animals are capable of providing a good quality and sufficient quantity of the serum. Professor Paltauf prefers the weaker serum, because he has found it less dangerous and capable of being administered to better advantage. The only solution of the difficulty would be to keep at least forty horses to select from. As the manufacture of serum is not permitted here to private enterprise, the government has to provide the funds, and bureaucratic red tape stands in the way. At all events, the supply of serum is at present sufficient for at least 600 cases per week for some time. It is expected that public interest and discussion will make the official machine work more rapidly.

Investigations Into Child Labor

The report of the inspector of factories contains some interesting facts in regard to the employment of children under 14 years of age. Of the 400,000 children in lower Austria, fully 10 per cent. are wage-earners; of these 45 per cent. are boys and 55 per cent. girls. As regards the nature of the work, 30 per cent. of the children are employed in domestic work, 15 per cent. in agricultural labor, and 22 per cent. in both kinds. Industrial concerns, chiefly textile factories and the stone, glass, leather, hair, clothing and millinery trades employ 12 per cent., and public-houses and hotels employ some. The wages paid are very low, varying between half a dollar a week or less and $2 a week. The most notable fact is that sometimes even children of 6 or 7 years are employed, a fact which must have an unfavorable influence on the growth and education of the children.

Correspondence

Mold for Carbon Dioxid Snow

To the Editor:—Dr. Sutton's paper in THE JOURNAL of Feb. 6, 1909, describing a mold for carbon dioxid snow, prompts me to call attention to a simple method of obtaining a similar result. For several months I have been using the cylinder of an old hypodermic syringe, end caps removed for the same purpose. The end of the metal container for the glass cylinder fits loosely within the nozzle of the CO_2 drum. A ring of rubber tubing, ⅛ inch wide, is slipped over the end of the syringe cylinder, making it fit snugly into the nozzle.

The other end is loosely plugged with cotton, the chamois wrapped over, and the whole held with a wooden clamp to prevent the hand from being frost-bitten. The gas is turned on lightly, frost forms on the glass cylinder, then a column of "snow" rapidly fills it from distal end downward. The cotton in the end prevents too rapid passage of gas. Entire closure would cause reverse pressure, a leak at the nozzle end, and no "snow" would form. The chamois is now wrapped around the cylinder for protection of the fingers, the cotton is removed and the column of "snow" (molded to fine point with finger and thumb if needed) is pushed down with the syringe piston onto the area to be treated. For large areas a hollow wooden cylinder ½ inch to 1 inch in diameter and one inch long is set close on the nozzle of the drum, the junction being made with adhesive plaster and the open end closed with cotton and wrapped with chamois skin. "Snow" is obtained quickly and can be pressed down, using a round bottle of the proper size or a piece of wood as a piston.

Marked simplicity over other methods justifies its publication. M. B. HUTCHINS, M.D., Atlanta, Ga.

"Mrs. Potter's Pure Walnut-Juice Hair-Dye"—Another Case of Poisoning

To the Editor:—You may be interested to hear that "Mrs. Potter's Pure Walnut-Juice Hair-Dye" is as effective in Boston as in Omaha. About two weeks ago, by courtesy of Dr. J. T. Sherman, of Dorchester, I saw an elderly woman who presented exactly the same picture as Dr. Schalek's patient, described in THE JOURNAL, Feb. 13, 1909, page 557. She stated that this was her second attack, she having been cured of the first about four weeks before at a hospital in the neighborhood of Boston. Her hair had obviously been dyed, and, when questioned, she produced the original bottle, saying that it was to her a new preparation and had been highly recommended. Each of her attacks followed the application of the dye and each responded promptly to treatment. WILLISTON W. BARKER, Dorchester, Mass.

Benzoate of Soda

To the Editor:—I feel that your editorial on the question of benzoate of soda was timely and well taken. It seems to me that a test of small doses of this drug on healthy men, under hygienic surroundings, with all facilities for recreation and diversion, means little. It will not be the healthy people in good surroundings who will consume canned goods, but most frequently men, women and children in isolated localities who are wholly dependent on such forms of food, and from the latter circumstance alone it very frequently happens that one has to deal with an appetite and digestion that is not up to the standard. HARPER PEDDECORD, St. Paul, Minn.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

FREEZING DOES NOT PURIFY ICE

To the Editor:—Please cite authorities, or reports from cities that have investigated the question, showing that freezing does not purify ice. J. H. MACKAY, M.D., Norfolk, Neb.

ANSWER.—That ice may contain a considerable variety of living and virulent bacteria has been shown by a number of researches. Notter (Treatise on Hygiene, 2d ed., p. 11) refers to investigations made by the State Board of Health of Massachusetts which showed that "there were 81 per cent. as many bacteria in the snow ice as in the waters; 10 per cent. as many in all other ice, and 2 per cent. as many in the clear ice as in the waters. It is therefore much safer to use for drinking water, and for placing in contact with food, that portion of the ice which is clear.

P. Sacerdote (Composition of Ice, *Presse Medicale*, xiv, No. 56; abstracted in THE JOURNAL, Sept. 8, 1906, p. 813) found that whatever the character of the water used, the water obtained by melting the outer clear parts is almost perfectly pure, while that from the central opaque part contains the impurities. The bacteria do not escape this law, he adds, but will be found congregated in the central part of the cake of ice. Park states that, according to the investigation of Dr. North, the bottom ice, the last to be frozen, contained but 2 per cent. of the number of bacteria in the water.

Harrington cites a case in which a number of French lieutenants developed typhoid from drinking champagne cup made with polluted ice. Most authors, however, agree that the danger of the communication of typhoid by ice is slight.

The State Board of Massachusetts, in its report concerning the bacterial content of the domestic supply, states: "In not one instance of the still freezing of ordinarily polluted water . . . have we been able to find *B. coli.*" (Report for 1900.) W. H. Park found no bacilli living at the end of 22 weeks in ice frozen from water containing before freezing 2,560,410 typhoid bacilli per cubic centimeter. At the end of five weeks only 0.1 per cent. of the bacteria were living.

We may conclude then that while infection from recently frozen, polluted ice may occur, it is not likely to do so if the ice is clear and has been frozen for a long time.

The following references may be consulted:

Fränkel, Ueber den Bakteriengehalt des Eises, *Zeitsch. f. Hygiene*, I.
Prudden: Bacteria in Ice, *Medical Record*, New York, Mar. 26 and Apr. 2, 1887.
Sedgwick and Winslow: Abstract in *Revue Scientifique*, April 28, 1900.
Park, W. H.: *Jour. Boston Society of Med. Sci.*, iv, p. 213.
Hill, H. W.: *Boston Medical and Surgical Journal*, Nov. 21, 1901.
Notter, J. L.: Ice and Snow Water, "Treatise on Hygiene," 2d ed., p. 11.
Harrington, C.: "Practical Hygiene," 2d ed., p. 393.
Park, W. H.: The Importance of Ice in the Production of Typhoid Fever, "Pathogenic Bacteria and Protozoa," 3d ed., p. 306.
Park, W. H.: The Importance of Ice in the Production of Typhoid Fever, THE JOURNAL, Aug. 31, 1907, p. 731.

The Public Service

Army Changes

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Feb. 27, 1909:

Reynolds, F. P., major, ordered to St. Paul, Minn., for temporary duty as chief surgeon.
Miller, E. W., capt., granted leave of absence for two months.
McIntyre, H. B., lieut., granted an extension of one month to his leave of absence.
Edie, G. L., lieut.-col., relieved from treatment at Hot Springs, Ark., and ordered to return to his proper station.
Ashburn, P. M., major, granted leave of absence for one month.
Lamble, J. S., Jr., lieut., ordered from Fort Monroe, Va., to duty at Camp St. Asaph's, Va.
Frick, E. B., major, granted leave of absence for ten days.
Chamberlain, W. P., major, detailed to represent the medical department of the army at the meeting of the American Society of Tropical Medicine at Washington, D. C., April 10, 1909.
Webber, H. A., major, ordered to Fort Niagara, N. Y., for duty on relief from treatment at Hot Springs, Ark.
Truby, W. F., major, granted leave of absence for three months.
Adair, G. W., col., retired from active service, on account of physical disability, Feb. 25, 1909.
Hess, L. T., major, granted leave of absence for three months.
Boak, S. D., dental surg., ordered to Vancouver Barracks, Wash., for duty on return from Cuba.
Craig, E. J., dent. surg., ordered to Fort Omaha, Neb., for twenty days, and thence to Fort Crook, Nebr., for one month.
Ryan, E. P. R., dent. surg., ordered to Fort Robinson, Nebr., for one month, and thence to Fort Meade, S. D., for one month.
Wheate, J. M., M. R. C., ordered to Fort Snelling, Minn., for temporary duty.
Patterson, E. W., M. R. C., arrived at San Francisco, Cal., on the transport *Buford* and ordered to Fort Sam Houston, Texas, for duty.
Parkman, W. E., M. R. C., granted leave of absence to March 7, 1909.
Peck, L. B., M. R. C., relieved from duty at Fort Andrews, Mass., and ordered to Fort Banks, Mass.
Tyler, G. T., M. R. C., relieved from duty at Fort Porter, N. Y., and ordered to Plattsburg Barracks, N. Y., for duty.
Sabin, W. E., M. R. C., relieved from duty in the Philippines division; will proceed on first available transport to San Francisco, for orders.

Navy Changes

Changes in the Medical Corps, U. S. Navy, for the week ending Feb. 27, 1909:

Old, E. H. H., P. A. surgeon, detached from the navy yard, Washington, D. C., and ordered to temporary duty at the Naval Training Station, Newport, R. I.

Bachus, J. W., P. A. surgeon, ordered to duty at the Naval Hospital, Narragansett Bay, R. I.

McDonnold, P. E., P. A. surgeon, detached from the *Connecticut* and ordered to temporary duty at the Naval Training Station, Newport, R. I.

Public Health and Marine-Hospital Service

List of changes of stations and duties of commissioned and other officers of the Public Health and Marine Hospital Service for the seven days ended Feb. 24, 1909:

von Ezdorf, R. H., P. A. surgeon, granted 2 days' leave of absence from Feb. 2, 1909, under paragraph 189, Service Regulations.

Parker, Herman B., P. A. surgeon, granted 1 day's leave of absence, Feb. 20, 1909, on account of sickness.

Boggess, John S., P. A. surgeon, relieved from duty on revenue cutter *Perry* and directed to proceed to Baltimore and report to the commanding officer of the revenue cutter *Tahoma* for duty.

Smith, F. C., P. A. surgeon, relieved from temporary duty in Hygienic Laboratory and directed to rejoin station at Fort Stanton, N. M.

Smith, P. C., P. A. surgeon, granted 10 days' leave of absence en route to station at Fort Stanton, N. M.

Simonson, G. T., acting assistant surgeon, granted 5 days' leave of absence from Feb. 23, 1909.

Stearns H. H., acting assistant surgeon, granted 1 day's extension of annual leave on account of sickness, Feb. 5, 1909.

Health Reports

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Heath and Marine-Hospital Service, during the week ended Feb. 26, 1909:

SMALLPOX—UNITED STATES

Alabama: Mobile, Jan. 30-Feb. 6, 1 case.
Arkansas: Magnolia, Jan. 5-Feb. 13, 25 cases.
California: Jan. 30-Feb. 6, 1 case; San Francisco, Feb. 7-13, 2 cases.
District of Columbia: Washington, Feb. 6-13, 3 cases.
Illinois: Cairo, Feb. 6-13, 25 cases; Danville, Feb. 7-14, 1 case; Peoria, Feb. 6-13, 1 case, imported.
Indiana: Elkhart, Feb. 6-13, 1 case; Evansville, Feb. 17, 1 case; Lafayette, Feb.1-15, 8 cases.
Kansas: Kansas City, Feb. 6-13, 3 cases; Topeka, Jan. 30-Feb. 13, 17 cases.
Kentucky: Covington, Feb. 6-13, 1 case; Lexington, 1 case.
Maine: Van Buren, Jan. 30-Feb. 6, 5 cases.
New York: Niagara, Feb. 6-13, 1 case; Schenectady, 1 case.
North Carolina: Charlotte, Jan. 1-31, 1 case.
Ohio: Cincinnati, Feb. 5-12, 9 cases; Dayton, Feb. 6-13, 1 case.
Oregon: Portland, Dec. 1-31, 21 cases.
Tennessee: Knoxville, Feb. 6-13, 3 cases; Memphis, 22 cases; Nashville, 1 case.
Texas: Cotulla, Feb. 17, present; San Antonio, Feb. 6-13, 1 case.
Utah: Salt Lake City, Jan. 1-31, 110 cases, 1 death.
Virginia: Norfolk, Feb. 4-17, 3 cases, from vessel.
Washington: Seattle, Jan. 1-31, 5 cases; Spokane, Jan. 30-Feb. 6, 1 case.
Wisconsin: La Crosse, Feb. 6-13, 2 cases; Manitowoc, 2 cases; Milwaukee, 9 cases.

SMALLPOX—FOREIGN

Arabia: Aden, Jan. 4-18, 5 deaths.
British Honduras: Stann Creek, Feb. 11, 1 case, imported.
Brazil: Rio de Janeiro, Dec. 27-Jan. 17, 194 cases, 83 deaths; Santos, Dec. 13-20, 2 cases, 1 death.
Canada: Halifax, Jan. 30-Feb. 6, 6 cases; Yarmouth, Feb. 13-20, 22 cases.
China: Shanghai, Dec. 26-Jan. 9, 2 cases, 1 death.
Egypt: Cairo, Jan. 7-14, 31 cases, 16 deaths.
Germany: Bremen, Jan. 16-23, 2 cases.
Guatemala: Guatemala City, Feb. 10, epidemic.
India: Bombay, Jan. 12-19, 5 deaths; Calcutta, Jan. 2-9, 31 deaths; Madras, Jan. 2-8, 1 death Rangoon, Jan. 2-9, 3 deaths.
Indo-China: Saigon, Dec. 26-Jan. 3, 1 case, 1 death.
Italy: General, Jan. 24-31, 3 cases; Naples, 29 cases, 8 deaths.
Malta: Jan. 15-23, 1 case.
Mexico: Monterey, Jan. 31-Feb. 7, 1 death.
Peru: Lima, Jan. 16, 3 cases.
Russia: Moscow, Jan. 16-23, 27 cases, 15 deaths; Riga, Jan. 23-30, 1 case; St. Petersburg, Jan. 9-16, 6 cases, 2 deaths.
Spain: Vigo, Jan. 23-30, 1 death.
Straits Settlements: Singapore, Dec. 26-Jan. 2, 1 case.

YELLOW FEVER

Barbados: Jan. 24-Feb. 9, 10 cases, 4 deaths.
Martinique: Fort de France, Jan. 16-30, 3 cases, 1 death.
Mexico: Merida, Jan. 30-Feb.6, 1 death; Ticul, 1 case, 1 death.

CHOLERA

India: Bombay, Jan. 12-19, 1 death; Calcutta, Jan. 2-9, 11 deaths, Madras, Jan. 2-8, 1 death; Rangoon, Jan. 2-9, 1 death.
Russia: General, Jan. 9-16, 122 cases, 54 deaths; Cronstadt, 2 cases; Moscow, Jan. 16-23, 1 case, 1 death; St. Petersburg, Jan. 9-16, 178 cases, 46 deaths; Jan. 25-29, 135 cases, 49 deaths.
Straits Settlements: Singapore, Dec. 21-Jan. 2, 41 deaths.

PLAGUE

Brazil: Rio de Janeiro, Dec. 27-Jan. 17, 11 cases, 6 deaths.
Chile: Iquique, Jan. 9-23, 8 cases, 3 deaths.
Egypt: General, Jan. 22-28, 6 cases, 2 deaths.
India: General, Jan. 2-16, 5,136 cases, 4,146 deaths; Bombay, Jan. 12-19, 17 deaths; Calcutta, Jan. 2-9, 14 cases; Rangoon, 12 deaths.
Japan: Nishinoura, Jan. 6, 1 case.
Peru: General, Jan. 9-16, 32 cases, 18 deaths; Callao, 5 cases, 3 deaths; Lima, 5 cases, 2 deaths.
Turkey: Jiddah, Jan. 22-24, 3 cases, 3 deaths.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CONNECTICUT HOMEOPATHIC: New Haven, Mar. 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave.
CONNECTICUT ECLECTIC: New Haven, Mar. 9. Sec., Dr. T. S. Hodge, Torrington.
CONNECTICUT REGULAR: New Haven, Mar. 9-10. Sec., Dr. Charles A. Tuttle, 196 York St.
MAINE: Portland, Mar. 9-10. Dr. W. J. Maybury, Saco.
MASSACHUSETTS: Boston, Mar. 9-11. Sec., Dr. Edwin B. Harvey, Room 159, State House.

Higher Requirements in Kansas

At a meeting held February 9, the Kansas Board of Medical Registration and Examination adopted the standard of preliminary education as outlined by the Council on Medical Education, which fixes the requirement as a four-year high school education or its equivalent and, in addition, after Jan. 1, 1910, a year of not less than nine months, devoted to the study of physics, chemistry, biology and one modern language, preferably German or French. There are now six states which have increased their requirements to one or more years of college work in addition to a four-year high school education. Minnesota and North Dakota will both require two years of college work, while Connecticut, South Dakota, Colorado and Kansas will require one year.

Iowa December Report

Dr. Louis A. Thomas, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, Dec. 8-10, 1908. The number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 16, of whom 8 passed and 8 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Northwestern University Medical School	(1906)	85.7
Sioux City College of Medicine	(1907)	80.6
Drake University	(1908)	86
University of Louisville	(1908)	85.6
Johns Hopkins University Medical School	(1907)	87.3
Creighton Medical College	(1908)	81.1
University of Toronto, Canada	(1906) 75; (1907)	81.2
FAILED		
College of Physicians and Surgeons, Chicago	(1905)	62.7*
University of Iowa	(1906) 71.5* (1908)	70.2*
University of Iowa, Homeopathic Department	(1908)	64.6*
Keokuk Medical College, College of Phys. and Surg.,	(1901) (1906) 53.2*.	68.3;
Drake University	(1908)	65.2*
Barnes Medical College	(1908)	70.7

* Failed also at a previous examination.

Marriages

H. H. CHEATHAM, M.D. Havana, Fla., to Miss Annie Elchinger of North Santa Clara, Fla., February 17.

JOHN RANDOLPH GARRETT, M.D., Roanoke, Va., to Miss Rebecca MacDowell, at Roanoke, February 17.

WILLIAM STEWART MCMURRAY, M.D., to Miss Ora May Bankhead, both of Bullock Creek, S. C., February 24.

CHARLES B. ALLEN, M.D., Parma, Idaho, to Miss Gracia M. Tibbetts of Everett, Mass., at Boise, Idaho, February 2.

ALFRED E. SPALDING, M.D., Luverne, Minn., to Miss Alma Orth of Minneapolis, at Lidgerwood, N. D., February 12.

JOSEPH FLEETWOOD HASELDEN, M.D., Greeleyville, S. C., to Miss Mamie Virginia Boyle of Sumter, S. C., January 27.

THOMAS LAWRENCE DISQUE, M.D., Pittsburg, to Miss Margaretta Watt Wilson of Germantown, Pa., February 24.

FREDERICK DAVIS RULAND, M.D., Westport, Conn., to Miss Leo Mabel Shattuck Van Dusen of Oneida, N. Y., January 27.

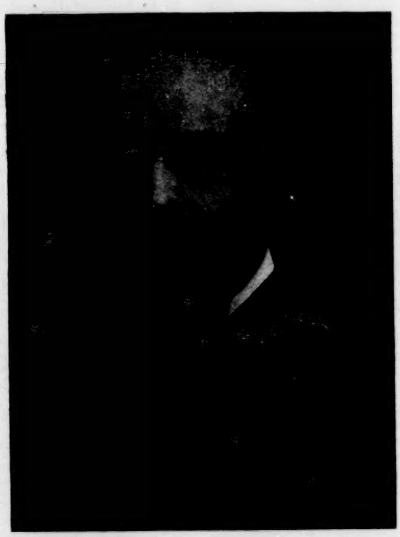
WILLIAM MCDONALD, JR., M.D., Providence, R. I., to Miss Elizabeth Marchon Hurkamp, at Fredericksburg, Va., February 18.

Deaths

Daniel Roberts Brower, M.D. Georgetown University, Washington, D. C., 1864; dean of the neurologists of Chicago; died at his home in that city, March 1, from cerebral hemorrhage, aged 69. He was born in Philadelphia and graduated from the Philadelphia Polytechnic College in 1860 with the degree of M.S.; he served in the Army as assistant surgeon of volunteers two years during the Civil War; and afterward as superintendent of the Freedmans Hospital, Richmond, Va., and later of the Virginia Eastern State Hospital for the Insane, Williamsburg, for nine years. He came to Illinois in 1875 and settled in Chicago, and soon became an important figure in the medical life of the city. He was for many years connected with Rush Medical College, first as professor of materia medica and therapeutics, and later as professor of nervous and mental diseases, and also held for many years the chair of diseases of the nervous system in the Northwestern University Woman's Medical School and the Chicago Post-Graduate Medical School.

He was a member of the American Medical Association; American Neurological Association; American Electro-Therapeutic Association; National Association for the Study of Epilepsy; Mississippi Valley Medical Association and Chicago Physicians' Club; the American Medico-Psychological Association; an honorary member of the Moscow Society of Neurologists and Psychiatrists and one of the founders of the Senn Club; and had been several times a delegate to international medical congresses. He was a member of the attending staff of St. Joseph's, Cook County and Presbyterian hospitals and consulting physician to the Women's and Children's Hospital and Oakwood Sanitarium. He was the author of a standard text-book on insanity, and of many monographs on nervous and mental diseases. He was given the honorary degree of A.M. by Wabash College, and that of LL.D. by Georgetown University, Kenyon College and St. Ignatius College.

He was in apparent good health until a week before his death, when he was seized with hemiplegia causing paralysis on the left side, but apparently not affecting his mentality. He gradually failed physically, but retained consciousness until a few hours before his death, which occurred at 3:30 a. m., Monday, March 1.



DANIEL R. BROWER, M.D., BORN 1839; DIED 1909

Dr. Brower was one of the most beloved medical men of Chicago. He always had kind words and help for the younger members of the profession; was an able consultant, and in spite of advancing years, kept thoroughly in touch with the latest ideas in his most complex of specialties. He was a constant worker for the public good; and to his efforts have been due many of the reforms instituted in the care of the dependent insane charges of the state. One of the last public services he performed was as a member of the non-partisan committee appointed to investigate conditions in the penal and charitable institutions of the state.

William McCollom, M. D. Castleton (Vt.) Medical College, 1853; for many years a member of the American Medical Association; and one of the oldest practitioners of Brooklyn, N. Y.; inspecting surgeon for the United States Government in 1861; and for many years chairman of the Brooklyn Board of Pension Examining Surgeons; sometime president of the Vermont State Medical Society, and of the Kings County (N. Y.) Medical Association; an incorporator, three years vice-president and one year acting president of the Medical Association of Greater New York; vice-president of the New York State Medical Association; and honorary member of the Connecticut State Medical Society; died at his home in Brooklyn, February 23, from acute bronchitis and pulmonary edema, aged 77.

William P. Illing, M.D. University of Arkansas, Little Rock, 1889; a member of the American Medical Association; and formerly president of the Little Rock Medical Society; a member of the Association of Hospital Superintendents of the United States and Canada, and of the Medical Society for the Study of Alcohol and Narcotics; physician to the Florence Chittenden Home; physician of Pulaski county; clinical lecturer on mental and nervous diseases in the University of Arkansas; one of the most prominent practitioners of Little Rock; died suddenly at his home, February 19, from heart disease, aged 41.

Philo Judson Farnsworth, M.D. University of Vermont, Burlington, 1858; College of Physicians and Surgeons, New York City, 1860; professor of materia medica and diseases of children in the University of Iowa from 1871 to 1894, and thereafter emeritus professor; for many years local surgeon at Clinton, Iowa, for the Chicago and Northwestern Railroad; a member of the local school board and for several years its president; the founder of the first public library in the city; died in Agatha Hospital, February 14, from injuries received by a fall down the stairs of his residence, three days before, aged 79.

Frederick Irving Knight, M.D. Harvard Medical School, Boston, 1866; a member of the American Medical Association and American Climatological Association; fellow of the American Academy of Arts and Sciences, and American Laryngological Association; consulting physician to the Massachusetts General Hospital and Sharon Sanatorium and Free Home for Consumptives; clinical professor of diseases of the throat and chest in Harvard Medical School for several years; died February 20, at his home in Boston, from angina pectoris, aged 67.

Thomas Lancaster, M.D. University of Pennsylvania, Philadelphia, 1866; a member of the Medical Society of the State of Pennsylvania and the Pennsylvania Pharmaceutical Association; director of schools of Philadelphia in 1880; formerly visiting physician to the Charity and Municipal hospitals; a specialist in climatology and diseases of the throat and lungs; died at the home of his son in Philadelphia, February 18, from senile debility, aged 75.

Charles Emmett Quigg, M.D. Bennett Medical College, Chicago, 1887; a member of the State Medical Society of Wisconsin; physician to the Tomah Indian Industrial School; formerly a member and for several years secretary of the State Board of Medical Examiners; health officer and three times mayor of Tomah, and a member of the state legislature; died at his home in Tomah, February 12, from pneumonia, aged 56.

John H. Tressel, M.D. Medical Reserve University, Cleveland, Ohio, 1863; a member of the American Medical Association; Union Medical Association of Northeastern Ohio; Tri-State Medical Society; International Association of Railway Surgeons; and Associations of Surgeons of the Pennsylvania Company; surgeon to the Pennsylvania System at Alliance, Ohio; died at his home, February 17, from peritonitis, aged 79.

Walter Allen Harding, M.D. Tufts College Medical School, Boston, 1899; a member of the American Medical Association and president of the Everett (Mass.) Medical Society; for two years assistant professor of anatomy in the College of Physicians and Surgeons, Boston; and twice a member of

the common council of Everett; died at his home, February 16, from pneumonia, aged 34.

Frank C. Hoskins, M.D. Western Reserve University, Cleveland, 1904; a member of the American Medical Association and Cleveland Academy of Medicine; physician in charge of Fairmount Home and the Tuberculosis Dispensary, and assistant surgeon to the nose and throat dispensary of his alma mater; died in Charity Hospital, Cleveland, February 18, from peritonitis, aged 30.

Samuel Davies Price, M.D. University of Virginia, Charlottesville, 1904; of Switchback, W. Va.; a member of the West Virginia State Medical Association; died February 12, at the Bluefield Sanitarium from typhoid fever, aged 26. His death is believed to have been the result of his heroic attention to the sufferers in the recent mine explosion at Switchback.

Ernest Henry Wheeler, M.D. Dartmouth Medical School, Hanover, N. H., 1893; of Augusta, Maine; lecturer on tropical medicine in his alma mater; who served as a contract surgeon in the U. S. Army in the Philippines; died at his home in Augusta, Maine, February 15, from peritonitis, following an operation for appendicitis, aged 38.

John Warren Atwood, M.D. Jefferson Medical College, Philadelphia, 1888; a member of the American Medical Association; surgeon to Highland Hospital, Matteawan, N. Y., and attending physician to the Protestant Episcopal Orphans' Home; and a well-known practitioner of Fishkill-on-Hudson; died at his home February 21, aged 46.

John McArden Johnstone, M.D. University of Pennsylvania, Philadelphia, 1852; who rendered faithful service during the epidemics of yellow fever which devastated Savannah, Ga., before the Civil War; division surgeon and medical director in the Confederate service; died at his home in Savannah, February 14, from pneumonia, aged 79.

Nathaniel Alden Robbins, M.D. Harvard Medical School, Boston, 1864; for twenty-five years chief surgeon to the New York Fire Department; assistant surgeon in the Navy during the Civil War; for several years surgeon to the Brooklyn City Dispensary; died at his home in Brooklyn, February 16, from heart disease, aged 68.

Alexander N. Denman, M.D. Tulane University, New Orleans, 1886; of Lufkin, Texas; a member of the State Medical Association of Texas; while crossing a railway track in Lufkin in his automobile Sept. 30, 1908, was run into by a switch engine and sustained injuries from which he died ten hours later.

Nicholas Sellberg, M.D. Chicago Homeopathic Medical College, 1903; of York, Neb.; a member of the Nebraska State Medical Association; died at a hotel in Hastings, February 12, from the effects of a gunshot wound of the head, believed to have been self-inflicted with suicidal intent, aged 37.

James Allen Creason, M.D. Kentucky School of Medicine, Louisville, 1889; a member of the Kentucky State Medical Association; formerly a practitioner of Lexington; died at the home of his mother near Jacksonville, Bourbon county, Ky., February 16, from pneumonia, aged 45.

Joseph Huber, M.D. College of Physicians and Surgeons, New York City, 1888; of Manhattan; a member of the Medical Society of the State of New York and of the New York Academy of Medicine; died in the Lebanon Hospital, February 21, from edema of the glottis, aged 50.

William Appley, M.D. University of Pennsylvania, Philadelphia, 1852; a member of the Phelps County (Mo.) Medical Society and County Board of Pension Examiners for several years; died at his home near Macedonia, Mo., February 4, aged 88.

Merritt Moses Ayers, M.D. University of Michigan, Ann Arbor, 1894; of Ohio City, Ohio; a member of the Ohio State Medical Association; died at the home of his brother in Wauseon, Ohio, February 16, from perforating ulcer of the duodenum, aged 41.

George Wells Way, M.D. Medical School of Maine, Brunswick, 1882; a member of the Maine Medical Association; secretary of the Megantic Fish and Game Association; died at his home in Portland, February 12, from meningitis, aged 52.

Horace E. Merkel, M.D. University of Pennsylvania, Philadelphia, 1885; formerly of Seattle; and surgeon of the Columbia and Puget Sound Railroad; died in the General Hospital, Kansas City, Mo., February 12, from septicemia.

Julius Augustus Escobar, M.D. New York University, New York City, 1891; First Lieutenant Medical Reserve Corps, U. S. Army; fell in an open well at Imus, Cavite, Luzon, P. I., Nov. 15, 1908, and was drowned, aged 40.

William Chandler Flagg, M.D. Medical College of Virginia, Richmond, 1882; a member of the Medical Society of Virginia; died suddenly from heart disease, at his home near Ruther Glen, February 10, aged 54.

Theodore H. Kemter, M.D. University of Kiel, Germany, 1862; assistant surgeon in the Schleswig-Holstein campaign; since 1871 a practitioner of Syracuse, N. Y.; died at his home, February 12, aged 70.

Joseph John Mann (license N. C., 1886), a member of the Medical Society of the State of North Carolina; died at his home in Louisburg, May 28, 1908, it is said from the use of alcohol and morphin, aged 48.

Charles Henry Roberts, M.D. Albany (N. Y.) Medical College, 1846; for nine years president of the Carolina Central Railroad; died at his home near Highland, Ulster county, N. Y., February 11, aged 87.

George G. Tandy, M.D. Royal College of Physicians and Surgeons, Glasgow, Scotland, 1860; of San Francisco; died at the home of his daughter in that city, February 12, from cerebral hemorrhage.

Nathaniel H. Longabaugh, M.D. University of Pennsylvania, Philadelphia, 1857; formerly of Norristown, Pa.; died at the home of his daughter in Camden, N. J., February 12, from senile debility, aged 86.

Charles D. Abbey, M.D. College of Physicians and Surgeons, Chicago, 1890; a member of the Illinois State Medical Society; died at his home in Chicago, February 21, from cardiac dropsy, aged 61.

Horace M. Logee, M.D. Western Homeopathic College, Cleveland, 1863; president of the Ohio State Homeopathic Medical Society in 1881; died at his home in Linesville, Pa., February 6, aged 74.

Elmer Judson Dowell, M.D. Maryland Medical College, Baltimore, 1900; of New York City; died at the home of his brother in Raleigh, N. C., Sept. 27, 1908, from acute multiple neuritis, aged 33.

George B. Murray, M.D. Albany (N. Y.) Medical College, 1873; of Sandy Hill, N. Y.; formerly of Greenwich, died suddenly from cerebral hemorrhage in a hotel in Sandy Hill, February 10, aged 59.

Charles E. Brown, Jr., M.D. University of Tennessee, Nashville, 1901; of Springfield, Mo.; died in the Springfield Hospital, Dec. 6, 1908, from an accidental gunshot wound of the abdomen, aged 39.

Eugene Franklin Hamburg, M.D. Long Island College Hospital, Brooklyn, 1883; a member of the Medical Society of the State of New York; died at his home in Rochester, February 7, aged 55.

John W. Burns, M.D. Eclectic Medical Institute, Cincinnati, 1892; formerly superintendent of schools of Richland county, Wis.; died at his home in Marshfield, Wis., February 9, from asthma, aged 40.

Adolph von Duering, M.D. New York University, New York City, 1885; died at his home in Bronx Borough, New York City, February 10, from septicemia, due to an operation wound, aged 56.

Joseph Scinton Casto, for more than fifty years a practitioner, and for two terms lecturer of the State Grange of Oregon, died at his home in Carus, Ore., January 12, from paralysis, aged 81.

Arthur Noble (license, Ohio, 1897), a member of the Ohio State Medical Association; and one of the oldest practitioners of Adams county; died at his home in Winchester, February 11, aged 83.

George S. Lockwood, M.D. University of Michigan, Ann Arbor, 1870; a member of the State Medical Society of Wisconsin; died recently and was buried from his home in Rome, January 2[illegible].

James William Clay Hall, M.D. Bellevue Hospital Medical College, New York City, 1869; a Confederate veteran; died at his home in Keyser, W. Va., February 5, from paralysis, aged 65.

V 19

Alexander H. Smith (license, Lauderdale county, Ala., 1890); a member of the Medical Association of the State of Alabama; died at his home in Lexington, February 17, aged 65.

William Faber, M.D. Columbus (Ohio) Medical College, 1889; coroner of Wayne County, Ohio, for three terms; died at his home in Rittman February 4, from disease of the liver, aged 43.

Otto Willis Woodward, M.D. Northwestern University, Chicago, 1908; of Nashua, Iowa; died at the home of Dr. P. E. Stuart in that city, February 4, from typhoid fever, aged 25.

Smith Gordon, M.D. University of Pennsylvania, Philadelphia, 1855; a member of the Rapides Parish (La.) Medical Society; died at his home in Alexandria, January 26, aged 75.

John J. Ensor (years of practice, Tenn., 1889), for more than half a century a practitioner of Tennessee; died at his home in Bristol, February 12, from senile debility, aged 82.

Tillman L. Loyd, M.D. Memphis (Tenn.) Hospital Medical College, 1886; of Myrtistown, La.; died at the Dale Sanatorium, Texarkana, Ark., January 17, from nephritis, aged 47.

Edward Henry McCabe, M.D. Long Island College Hospital, Brooklyn, 1874; a member of the Delaware State Medical Society; died at his home in Dagsboro, Del., recently, aged 66.

John Foster Lightfoot, M.D. Medical College of Ohio, Cincinnati, 1884; a Federal guard during the Civil War; died at his home in Hawesville, Ky., from uremia, February 13.

Otho William Hill, M.D. University of Colorado, Boulder, 1908; house physician in St. Joseph's Hospital, Denver; died in that institution February 11, from pneumonia, aged 23.

Jacob Cathedral Arant, M.D. Medical College of the State of South Carolina, Charleston, 1859; died at his home near Elloree, S. C., Nov. 8, 1908, from senile debility, aged 77.

William Lilley (years of practice, Mass.); a veteran of the Civil War; for more than thirty years a practitioner of New Bedford, Mass.; died at his home, February 9, aged 64.

David A. Kirk, M.D. Detroit (Mich.) Medical College, 1888; of LeSueur, Minn.; formerly a member of the Minnesota State Medical Association; died in Minneapolis in January.

John Harrison Francis Irvine, M.D. Willamette University, Salem, Ore., 1876; was accidentally shot and killed at his farm near Tallman, Ore., Sept. 22, 1908, aged 58.

William W. Payne, M.D. Medical College of Virginia, Richmond, 1860; a Confederate veteran; died at his home in Warrenton, Va., February 3, from nephritis, aged 75.

John Joseph Garrity, M.D. University of Toronto, 1908; of Toronto; an interne at St. Mary's Hospital, Evansville, Ind.; died in that institution February 22, aged 30.

John M. Gambrell, M.D. Transylvania University, Lexington, Ky., 1842; of Huntsville, Texas; died at the home of his son in Lockhart, Texas, Dec. 9, 1908, aged 89.

Ira C. Shute, M.D. University of Louisville (Ky.), 1873; a member of the Louisiana State Medical Society; died at his home in Opelousas, Dec. 4, 1908, aged 58.

Egbert Perses Williams, M.D. University of Virginia, Charlottesville, 1881; died at his home in Stedman, N. C., January 30, from cerebral hemorrhage, aged 49.

John Gilder Lowber, M.D. Eclectic Medical Institute, Cincinnati, 1878; died at his home in South Pittsburg, Tenn., Dec. 17, 1908, from pneumonia, aged 65.

John H. Armstrong, M.D. University of Tennessee, Nashville, 1880; died at his home in Caney, Okla., February 15, from heart disease, aged 50.

John Johnston, M.D. Kentucky School of Medicine, Louisville, 1885; died at his home in Sidney, Ark., February 12, from pneumonia, aged 65.

Francis Middlemas, M.D. Harvard Medical School, Boston, 1873; died suddenly at his home in Berwick, N. S., Nov. 10, 1908, aged 62.

Joseph R. Gunston, M.D. Eclectic Medical University, Kansas City, 1904; died at his home in Lenora, Kan., February 8.

John Calendar Clark, M.D. University of Nashville (Tenn.), 1900; died at his home in Mount Calm, Texas, February 9.

Sheldon J. Bassett (years of practice, Ill., 1878), died at his home in St. Elmo, Ill., February 5, aged 71.

Alfred Day, M.D. University of Buffalo, N. Y., 1887; died at his home in Buffalo, February 12, aged 75.

Miscellany

Clippings from Lay Exchanges

GAS GASTRITIS

"Mrs. ——— died . . . from gastric poisoning resulting from eating canned salmon. . . . For two years past the deceased had been suffering from weak heart action, and the weakened condition of that organ made it more easily affected by the poisonous gas."—*Platte* (Neb.) *Semi-Weekly Tribune.*

THANKS TO THE DOCTOR—NO MENTION OF STORK

"Mr. and Mrs. X———, September 13, a girl. Thanks to Dr. K——— H———."—*New York Herald.*

VERY MUCH ELONGATED APPENDIX ON SATURDAYS

"Will M——— is driving H——— F———'s meat around while H——— is confined in the hospital in town getting his appendix cut out which takes two days per week and extends up in Bucks county on Saturdays not saying anything about customers in Fox Chase and Torresdale."—*Rustleton* (Pa.) *News* quoted in *Outdoor Life.*

A MUSICAL TREAT

"What is described . . . as a remarkable surgical operation has been performed at the H——— hospital with apparent success. . . . The patient, Mrs. D———, was suffering from a cancerous growth of the abdominal organ. . . . The operation lasted for nearly three hours. Six organs were removed including the upper portion of the bladder, the vermiform appendix, ten inches of the ilium and the ascending colon. According to the physicians operations on these individual organs have been performed, but never in a combination of six. . . Dr. E——— said it appeared the time was not far distant when almost any excepting the vital organs can be removed without danger of death."—Associated Press Telegram to Chicago *Journal.*

Rules Governing Mailing of Pathologic Specimens.—Few physicians are conversant with the stringent regulations of the Postoffice Department governing the admission to the mails of cultures and specimens of diseased tissues. Inasmuch as it is frequently necessary to transmit pathologic specimens to laboratories for test, and especially because speedy transmission is essential, the text of the postal rules on this subject is printed in full below. Special attention is directed to the exactitude of the requirements for packing. It should be noted that the postal service will handle cultures or specimens only when destined to United States, state or municipal laboratories. Specimens intended for medical laboratories other than public institutions must be transmitted by messenger or express.

SECTION 495, POSTAL LAWS AND REGULATIONS

DISEASED TISSUES—WHEN MAILABLE

1. Specimens of diseased tissues may be admitted to the mail for transmission to United States, state or municipal laboratories, only when inclosed in mailing packages constructed in accordance with this regulation.

2. Liquid cultures, or cultures of micro-organisms in media that are fluid at the ordinary temperature (below 45° C. or 113° F.) are unmailable. Such specimens may be sent in media that remain solid at ordinary temperatures.

INDORSEMENT ON PACKAGES

3. On the outside of every package of diseased tissues admitted to the mails shall be written or printed the words "Specimen for Bacteriologic Examination. This package to be treated as letter mail." No package containing diseased tissues shall be delivered to any representative of any of said laboratories until a permit shall have first been issued by the postmaster-general certifying that said institution has been found to be entitled, in accordance with the requirements of this regulation, to receive such specimens.

MANNER OF PREPARATION FOR MAILING

4. Packages used for conveying through the mails pathologic specimens for bacteriologic examination for diagnosis in cases of suspected diphtheria, tuberculosis, and other communicable diseases, shall be constructed and prepared as follows:

MOIST SPECIMENS. VIAL OR TUBE

a. The receptacle for moist specimens of diseased tissues shall be a strong glass vial or test tube having a capacity not greater than two drams. The vial shall be covered and made water-tight by the use of a metal screw cap and a rubber or felt washer which has been immersed in melted paraffin, or, if a test tube be used, it shall be covered with a tightly fitting rubber cap.

INNER BOX

b. The vial or test tube shall be placed inverted in a circular tin box, which shall be made of I. C. bright tin plate, and have flush or countersunk bottom and soldered joints and not be smaller than one and one-eighth inches in diameter and three inches long, nor larger than two and one-quarter inches in diameter and five and one-half inches long. This box shall be closed by a metal screw cover and a rubber or felt washer, or tightly fitting metal-sliding cover, and shall be so packed with absorbent cotton, closely laid, that the glass or test tube contained therein shall be evenly surrounded on all sides by cotton.

OUTER TIN OR WOODEN BOX

c. The tin box shall be placed inverted inside of a larger tin box similar to the one already described, which should snugly receive the specimen box. On the inside of the sides and bottom of this outer box there shall be a lining of compressed paper not less than three-sixteenths of an inch in thickness. This outer tin box shall be closed by a metal screw cap and a rubber or felt washer. This outside box may also consist of hard wood, in the form of a block with a cylindrical hole bored in one end and extending to within not less than one inch of the opposite end; the open end to be closed with a wooden or metal screw cap with a rubber or felt washer. Or the outside box may be a cylindrical wooden box having a screw cap and washer. The thickness of the sustaining part of the wooden tube must be not less than one-quarter of an inch and be lined same as the tin box.

DRY SPECIMENS. TEST TUBE

d. The receptacle for dry specimens of diseased tissues shall be a glass test tube, three inches in length and one-half inch in diameter. This test tube shall be enclosed in a circular tin box similar to those already described but measuring two and one-quarter inches in diameter, and five and one-half inches in length, and be lined on its sides and bottom with compressed paper not less than one-quarter of an inch in thickness. The test tube shall be closely packed in cotton, and the box shall be closed by a metal screw cap and a rubber or felt washer.

The Campaign in Italy Against Uterine Cancer.—This was the leading theme discussed at the recent Italian Congress for Obstetrics and Gynecology, Pestalozza delivering an address on the present status of the question, which he summarized as: (1) increased faith in the efficacy of surgical treatment; (2) necessity for a campaign in favor of early diagnosis; (3) new horizons opened for further research, and (4) new hopes for treatment, especially in serotherapy. Sanfelice's efforts in the line of serotherapy have been crowned with success in experiments on animals with spontaneous tumors. Several speakers emphasized the necessity for ablation of the vagina as more important than of the glands in removing uterine cancer, whether the operation was abdominal or vaginal. A number also dwelt on the necessity for prompt and thorough treatment of all benign affections of the cervix which otherwise might degenerate into cancer. The congress sent a telegram of congratulation to Professor Sanfelice. It seemed to be the general opinion that uterine cancer is decidedly on the increase in Italy, the mortality from malignant disease having increased of late years out of proportion to the increase in the population. In the discussion of puerperal fever, Truzzi stated that he had obtained good results from calcium chlorid in the pyemic form; he ascribed it to the increased density of the blood clots, thus imprisoning the pathogenic germs, besides a stimulating action on the nervous system and heart. Serotherapy has proved useful in the experience of several, as also intravenous injection of mercuric chlorid. Two new cases of osteomalacia cured with suprarenal preparations were reported. The congress next year is to be held at Rome, and the themes appointed for discussion are "Measurement of the Pelvis" and "Diagnosis and Treatment of Tubal Pregnancy." The details of the congress are published in *Ginecologia*, Nov. 30, 1908. It will be remembered that the Fifth International Congress for Gynecology and Obstetrics is also to meet at Rome during 1911.

Percussion in Treatment of Retention of Urine in Young Children.—Bosselut describes a simple measure with which he has been successful in curing retention of urine in little children. In a communication cited in the *Gazette Méd. Belge*, Jan. 7, 1909, page 149, he reports the fifth case in which he has found it successful. The little patient was a boy of 2 who had not urinated for nearly twenty-four hours. There was considerable elevation of temperature, with rapid pulse, the abdomen much distended, the bladder full of urine, and the child pale and moaning. With the fingers placed in turn on each side and in the middle of the abdomen he percussed with the other hand very lightly and repeatedly. In a few seconds the child voided his urine and the symptoms gradually subsided. The retention recurred again the next day, but yielded again to the same measure; since then the child has been in perfect health.

Thyroid Origin of Rheumatism.—Diamantberger has been affirming for eighteen years that there is a close connection between acute and chronic rheumatism and functional and organic disturbances in the thyroid. Other writers of late years have noted the coincidence of exophthalmic goiter with acute or chronic rheumatism and have called attention to the hypertrophy and tenderness of the thyroid in various nervous diseases. The therapeutic test of this connection between the thyroid and rheumatism is the efficacy of thyroid treatment in certain cases of rheumatism. In his latest communication on the subject, published in the *Bulletin de la Soc. Méd. des Hop.*, Oct. 22, 1909, page 335, he states that the thyroid treatment must be long continued—given for eight or ten days at a time, with longer or shorter intervals of suspension, or alternating with tonics, arsenic, iron, etc. These measures should be supplemented with the usual soothing symptomatic medication with sodium salicylate, etc. These drugs are more effectual in smaller dosage when supplemented by thyroid treatment. This latter cures, he adds; the others merely relieve.

Power of Attention in Idiocy.—Herman B. Sheffield, New York, in the *Post-Graduate*, February, states that in idiots or mentally backward children the power of attention is always either very poorly developed or entirely absent. They fail to take notice of their surroundings, stare vaguely into empty space, or move the eyes irregularly in all directions, apparently seeing nothing. This want of attention may be due to partial or total blindness, as is frequently the case in amaurotic family idiocy of central origin, without involvement of the eyeball. Occasionally the patient may be subject to congenital cataract, microphthalmos, coloboma iridis, iridemia, lesions of the vitreous, strabismus, and similar defects which, in conjunction with other stigmata, facilitate diagnosis.

The Blood in Plague.—G. Moniz has been making a systematic study of the blood in a number of cases of plague and publishes the findings in the *Gazeta Medica da Bahia*, xxxix, No. 11, page 482. During the acute phase the neutrophile polynuclears increase very much, as also the mononuclears, while the lymphocytes are reduced. As convalescence comes on, the eosinophiles, absent before, begin to reappear.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, POSTGRADUATE WORK, CONTRACT PRACTICE, INSURANCE FEES, LEGISLATION, ETC.

The Coming Change in the Medical Profession

A significant and noteworthy address, under the above title, delivered by President Charles W. Eliot, of Harvard University, before the Aesculapian Club of Boston, on January 28, appears in the *Boston Medical and Surgical Journal*, February 11. Prefacing his discussion of the subject by a consideration of the changes which have taken place in the last generation in the teaching and practice of medicine, President Eliot says: "Many gentlemen in this room have lived through a prodigious change not only in medical teaching, but in all teaching, and they have witnessed also a prodigious addition to the natural forces which may be controlled by man for the development of medical science. It is almost comical to look back to the means of teaching which existed in the medical school when I first gave there a course of chemical lectures in 1855."

After some interesting reminiscences regarding the methods of instruction used at Harvard in the middle of the last century as contrasted with our present-day methods and possibilities, President Eliot asks: "Can we doubt whether the medical profession as a means of livelihood and of public service is going to be greatly changed in the near future?

Evidently it is not only liable to change, but sure to change. . . . Is it possible to foresee in any measure the coming change in the practice of medicine as a money-earning and livelihood-yielding profession?"

After discussing the effect of latter-day cults and fads on medical practice, the reduction of fees in surgical work due to the widespread mastery of surgical technic and the effect of preventive medicine on medicine as a profession, President Eliot concludes that we must "give a new attention to preventive medicine as the stronghold of the medical profession hereafter." He suggests the increase in salaries and positions in preventive work as an indication of its growing importance, and then, discussing the effect of this development on private practice, he says: "We must see at once that the practice of the profession will be seriously affected if preventive medicine becomes successful on a broad scale. The very source of the livelihood will be dried up if preventive medicine succeeds. We might, perhaps, imagine that surgery would escape from this result of the well-directed expenditures of society for protection against disease and would remain a better field for the acquisition of a livelihood than medicine." Even this he is inclined to doubt, since all the discoveries in bacteriology and pathology tend to prevent the conditions for which surgery supplies a remedy. The results of the discovery of a cure for cancer is given as an illustration. He then asks whether the coming change will not be welcome. "Is not the function of the medical profession regarded as preventive, higher, better, happier than the function of the medical profession regarded as curative? . . . Medical education should take this direction strongly and decidedly."

President Eliot's remarks and predictions are worthy of the most careful consideration. That the ultimate work of the medical profession will be prevention and that its membership will be limited to those holding state positions as "sanitary policemen" is doubtful, but that the value of preventive medicine will greatly increase in the next generation as it has in the past and that it will have a decided effect on the practice of medicine from an economic standpoint there is no question.

Medical Legislation

WYOMING

Dr. S. B. Miller, secretary of the State Board of Medical Examiners, writes: "The Wyoming legislature has adjourned without any changes being made in our medical-practice law. Several attempts at amendment were made, but they were not successful."

NEW MEXICO

H. B. 37 amends the osteopathic law of New Mexico by providing that osteopaths licensed in other states and territories having the same standard can be licensed in New Mexico without examination. H. B. 84 amends a number of sections of the medical-practice act, and Council Bill 63 amends the pharmacy law.

NORTH DAKOTA

S. B. 131, establishing an examining board for osteopaths, has passed the senate and is now in the house.

VERMONT

Vermont has passed an act amending a number of sections of the medical-practice act; an act defining optometry and authorizing the establishment of a state board of examiners in optometry of three persons, who must have been engaged exclusively in the practice of optometry for at least five years previous to appointment; an act amending the law governing the construction of school houses, churches, etc.; an act appropriating $15,000 annually for the expenses of the state board of health laboratory; an act regulating the sanitation of slaughter houses; an act providing for the purchase and free distribution of antitoxin; an act amending the pure food and drug law, and an act prohibiting the discharge of sewage or other polluted matter into ponds and lakes in the state.

Physicians to Agree on Study Hours

The Lawrence Medical Club of Lawrence, Mass., appointed a committee to consult with all of the physicians of Lawrence, Methuen, Andover and North Andover and to ascertain if one afternoon and evening of each week can be set aside for study and recreation on the part of practicing physicians, the intention being to agree on a certain afternoon and evening and to ask all practicing physicians to have no office hours after 1 p. m. on that day. A similar plan has been put in practice in Lowell, Mass., Manchester, N. H., and elsewhere. Each physician in the towns named has received a circular letter asking his preference as to the day.

POSTGRADUATE COURSE FOR COUNTY SOCIETIES

DR. JOHN H. BLACKBURN, DIRECTOR
BOWLING GREEN, KENTUCKY

Eighth Month

General Subject for the Month: Diseases of Spinal Cord and Nerves

First Weekly Meeting

ANATOMY

(Demonstrate Gross and Microscopic Sections)

SPINAL CANAL.—Boundaries, extent, dimensions, contents. Epidural space.

MEMBRANES OF THE CORD.—Dura mater: Structure, attachments, prolongations, ligamenta denticulata. Differs from dura of brain.

Arachnoid: Structure, attachments, subarachnoid space, communication with brain, cerebrospinal fluid.

Pia mater: Structure, attachments, prolongations, filum terminale.

STRUCTURE OF THE CORD.—Shape, length, boundaries, diameters, enlargements, cauda equina. Fissures, anterior, posterior. Grooves, antero- and posterolateral. Gray nerve substances: Shape, commissure, horns, roots of nerves. White nerve substance: directions of fibers. Posterior column: postero-median and posterolateral tracts. Dorsal root fibers, tract of Lissauer. Lateral column; crossed pyramidal, direct cerebellar, Gowers', lateral ground bundle. Anterior column; pyramidal tract, anterior ground bundle.

BLOOD VESSELS OF CORD.—Anterior and two posterior arteries, radicular branches, blood supply of gray matter, of white matter. Veins of cord and membranes.

PHYSIOLOGY OF THE CORD

REFLEX ACTIONS.—Definition, reflex arc. Spinal reflexes: (1) simple, (2) coördinate, (3) incoördinate. Produced (1) by sensory stimuli, (2) by heightening reflex irritability. Time of reflex impulses. Inhibition of reflexes: (1) voluntary, (2) Setschenow's centers, (3) strong stimulation of sensory nerve, (4) poisons, chloroform, etc. Reflexes: (a) plantar, (b) patellar, (c) cremasteric, (d) abdominal, (e) epigastric, (f) scapular, (g) cilio-spinal. Spinal reflex centers: (a) ano-spinal, (b) vesico-spinal, (c) genito-spinal, (d) ejaculation, (e) vasomotor, (f) sweat, (g) parturition.

CONDUCTION PATHS.—White matter: Methods for determining tracts, direction of fibers, long and short tracts. Long spinal tracts: (1) in posterior column, (a) tract of Goll, (b) of Burdach; (2) lateral column, (a) crossed pyramidal, (b) direct cerebellar, (c) Gowers', (d) antero-lateral ground bundle; (3) anterior column, (a) direct pyramidal, (b) anterior ground bundle; direction, character of impulse of each. Tracts for pain, touch and temperature.

Gray matter: 1. Anterior root cells. 2. Tract cells, (a) tautomeric, (b) heteromeric, (c) hecatomeric. 3. Golgi cells (second type). 4. Posterior root cells. Relations of white and gray matter in the cord.

Reference books for eighth month: Text-books on nervous and mental diseases by Church and Peterson, Dana, Pearce, Starr, and Strümpell. On practice by Osler, Tyson, Anders and Hare.

Society Proceedings

COMING MEETINGS

American Medical Association, Atlantic City, June 8-11.
Medical Society of the Missouri Valley, St. Joseph, Mar. 18-19.

AMERICAN PHARMACEUTICAL ASSOCIATION, CITY OF WASHINGTON BRANCH

Regular Meeting, held at George Washington University, Washington, D. C., Feb. 9, 1909

The Vice-President, SAMUEL L. HILTON, in the Chair

Physiologic Standardizing of Serums

DR. M. J. ROSENAU, Director of the Hygienic Laboratory, said that it was impossible to recognize the presence of toxins by any chemical or physical tests; it could be done only by animal experimentation. Of even greater importance than the toxins were the antitoxins. Rosenau referred to the work of Behring and Roux, and of Theobald Smith, who first demonstrated the existence of toxins which have been likened successively to ferments and to alkaloids, and Rosenau showed wherein they differed from these bodies. He briefly outlined the nature and production of antitoxins and the production of immunity in the horse, using diphtheria antitoxin as an illustration. He referred to the work of Ehrlich in connection with the determination of the strength of the material thus produced and the preparation, preservation and maintenance of a standard unit. The introduction of antidiphtheritic and antitetanic serums was to be ranked with vaccination, anesthesia and antisepsis as among the greatest benefits conferred by medical science on humanity. The need for the prompt administration of these serums was shown by the statement that a single unit, administered within twenty-four hours, would save a guinea-pig, whereas, after forty-eight hours, four thousand units would scarcely suffice. The administration of antidiphtheritic serum in the very earliest stages of the disease reduced the mortality practically to *nil*. The unfavorable statistics, on analysis, were shown to be made up from hospital cases in which the administration of the remedy has been too long delayed. It is not fair to base deductions on such cases.

Physiologic Testing as a Necessary Step in the Control of Active Drugs

DR. WORTH HALE, Hygienic Laboratory, Division of Pharmacology, remarked that progress in medicine was indicated in greater accuracy in prescribing and this was a result of the development of experimental pharmacology. With the exception of pilocarpin all the really valuable drugs introduced within the past forty years had come by this route. Digitalis was known and misused for many years, but true knowledge of its action, and consequently of its possibilities, had come only through animal experimentation. The chemistry of digitalis was still uncertain, but the biologic method afforded valuable means of standardizing its preparations. A series of samples of tincture of digitalis examined at the University of Michigan varied between 8 and 29, another series examined at the Hygienic Laboratory varied between 21 and 85, while one specimen actually caused a fall in blood pressure and cardiac depression. The method of standardization should take into consideration the therapeutic use to which the particular drug was to be applied. With digitalis, for instance, the heart method would seem to be the most logical. There was great need of uniformity in methods and it was suggested that this subject might well claim the attention of the revisers of the pharmacopeia at their next meeting.

The Need for the Study of the Action of Drugs in Pathologic Conditions

DR. W. SALANT, Department of Agriculture, said that factors modifying the action of drugs were those of absorption, oxidation and elimination; as these factors, singly or collectively, were varied, material differences in the action of drugs were to be noted. In illustration of these points the varying action of a number of different drugs, in health and in disease, was cited, and the paper closed with the suggestion that new drugs should be tested on animals in which the conditions for which the drugs were to be used in human therapy had been produced artificially.

Little Understood Phases of Biologic Testing

DR. ALBERT C. CRAWFORD, Department of Agriculture, said that the subject interested him from three different standpoints: (1) The isolation of active principles; (2) the standardization of medicinal preparations; (3) the toxicity of stock-feed materials. The chemist and the pharmacologist were mutually interdependent. Perhaps as we learned more of the chemistry of these substances we might be able to do away with the biologic test. Starling's work on the hormones was of great significance and promise. There was need not only of standardization of preparations but of uniformity in methods of standardization. With ergot, for instance, since its therapeutic use was in connection with uterine activity, this was the organ which should be selected as the basis of all biologic tests for the determination of a uniform and adequate standard preparation. The form in which the active principle existed and the ingredients with which it was associated were of the utmost importance. No avenue of attack should be left untried. With reference to feeding experiments on animals, and in the study of loco, lupine, corn stalk and millet diseases, the chemists had offered but little help. In the study of bothriocephalus anemia by the combined biologic and chemic methods the influence of oleic acid might throw some light on the explanation of immunity.

Discussion on Standardizing of Drugs

DR. REID HUNT, Hygienic Laboratory, spoke of the variations in strength of such products as the preparations of the suprarenal glands, of the difficulty and cost of purifying such active principles, the relative value of physiologic and chemic methods and the necessity for the establishment of reasonable standards. The relative value of natural and synthetic products could be determined only by physiologic methods. Because of their greater facility of application, and by a larger class of workers, it was desirable that chemical should replace biologic tests. This might soon be possible in the case of thyroids, through their iodin content, and yet thyroid could be tested physiologically in amounts so small as would not give an iodin test by any known chemical method. Notwithstanding the action of the Pharmacopeial Convention of 1900, physiologic tests were of necessity introduced into the pharmacopeia.

A legal test for antitetanic serum had now been promulgated and this product would no doubt receive pharmacopeial recognition. Tuberculin could be tested only by physiologic methods. Referring to the methods of making such tests, he called attention to the fact that in a large proportion of the experiments, all blood pressure observations, for instance, it was absolutely essential that the animal be fully anesthetized to eliminate any possible disturbance due to pain. Thus in suprarenal experiments the animal was deeply anesthetized. In digitalis experiments the frog's heart was studied after the frog had been killed. In experiments with cannabis indica, dogs manifested as much hilarity as do men under similar conditions. With reference to antitoxin, if the serum were good, there was no pain; if bad, it was simply a question of the relative importance of the guinea-pig or the child. Experiments on animals were already thoroughly regulated and were conducted only in schools or scientific laboratories under competent supervision. In spite of all the agitation and investigation in Washington no cruelty was found.

DR. JOHN F. ANDERSON, Hygienic Laboratory, spoke of federal control of therapeutic serums and the mechanism of regulation. One of the benefits to be recognized from this control was to be seen in the progressive increase in potency of these products. As yet there was no control over veterinary serums.

CHICAGO GYNECOLOGICAL AND CHICAGO SURGICAL SOCIETIES

Joint Meeting, held Jan. 22, 1909

DR. HENRY F. LEWIS, President Chicago Gynecological Society, in the Chair

Nephrectomy for Persistent Hematuria

DR. SAMUEL L. WEBER showed a kidney which had been removed from a woman of 41 on account of persistent hematuria which could not be controlled in any other way. The extreme upper pole of the kidney disclosed an anemic infarct, and he thought that hemorrhage came from one of the papillæ of the kidney.

Arteriosclerosis of the Uterus

DR. S. L. WEBER showed a uterus removed from a woman of 40. She had had 6 or 7 children, several abortions, and a year ago had a miscarriage at four months, and since then has had menorrhagia. He removed the uterus by the vaginal route, applying two clamps to each broad ligament. A diagnosis of arteriosclerosis was made before operation.

Long and Large Appendix

DR. CARL WAGNER showed an appendix nine inches long which he had removed from a woman of 55, who had been ill only three days before the operation. The appendix was about the size of the index finger and contained four stones.

DR. WAGNER also exhibited a specimen of carcinoma of the clitoris, removed from a woman of 52. The disease involved the left side of the vulva, as well as the glands. The glands were removed with the clitoris.

Multilocular Cyst of the Ovary

DR. HENRY F. LEWIS showed a ligament as the result of a ventrosuspension of the uterus. The patient, aged 26, married four years, had never borne any children. Three years ago she was operated on, the operation consisting in sewing the uterus to the abdominal wall. At that time the appendages were said to be normal. She had very few symptoms of any trouble until three or four months before she consulted Dr. Lewis. She had had three menstrual periods, the amount of discharge being greatly diminished in each. She had nausea and increased micturition, with other symptoms indicative of pregnancy. Examination disclosed a soft tumor as large as an orange on the right side. The left side was apparently negative. The uterus was retroverted and bound down to the posterior part of the pelvis by tight adhesions which could not be absolutely freed. There was no motion of the uterus by bimanual manipulation. Operation did not disclose ectopic pregnancy, but an ordinary multilocular cyst of the ovary, which was removed with the tube, which was closely connected with it. The interesting point was the elongated artificial ligament running from the abdominal wall in the median line a few inches above the pubes to the fundus of the uterus, and which was found far back in the depths of the pelvis. The ligament measured five inches and a half.

Aneurism of the Aorta

DR. A. D. BEVAN presented a patient, a fireman, aged 28, who gave a history of a specific lesion dating back ten or twelve years. Within the last year and a half he had developed a large aneurism at the junction of the ascending with the transverse part of the aorta. The patient consulted Dr. Bevan about the beginning of December, when he was suffering much pain. He was unable to move his right arm, could not lie down to sleep, and there was an absence of radial pulse in the left arm. A good *x*-ray picture was taken to show the exact location of the aneurism. With the assistance of Dr. Dean Lewis, Dr. Bevan wired it on December 10. A gold trocar was inserted on the outside to the right of the median line, to a distance of an inch and a half, but he did not get it into the aneurismal sac. Then he withdrew it and introduced it a little to the left of the median line, about two inches, when blood began to trickle drop by drop slowly from the trocar. He then introduced fifteen feet of gold wire through the trocar and applied gradually about 50 milliamperes of electricity, the positive pole being applied to the wire and the negative to a large lead plate on which the patient rested. The current was passed through the wire for about three-quarters of an hour. The process was not very painful. When the current was first turned on the patient could only stand about thirty milliamperes; this was gradually increased to forty, and finally to fifty milliamperes. There has been marked improvement. Pulsation is no longer noticeable in the sac and pain has disappeared entirely. The patient can now move the right arm and can lie down and sleep with comfort. In addition to this treatment, for a short time after the wiring of the aneurism the patient was placed on small doses of potassium iodid.

Gunshot Wound of Liver, Kidney, Lung and Hip, Causing Aneurism. Operation and Recovery

DR. A. E. HALSTEAD: An Italian, aged about 40, was admitted to St. Luke's Hospital Nov. 2, 1908, after being shot from behind a short time previously. Five shots were fired at him, four of which took effect. The first entered the tenth interspace on the right side, three inches from the median line behind, and passed completely through the body, penetrating the chest wall, pleura, lung and liver, breaking its exit in front through the sixth costal cartilage about three inches from the median line. The second entered just below the twelfth rib, two inches from the median line on the right side, and penetrated the right kidney, passed in front of the ascending colon, and lodged in the muscles of the abdominal wall. The third entered the right hip on a level with the upper margin of the great trochanter and passed downward and out three inches above the knee, on the internal aspect of the thigh. The fourth passed through the upper part of the left scapula, upward and through the scapula, apex of left lung, and out in front. The wound of exit made by this bullet was just below the clavicle at a point corresponding to the junction of its outer and middle thirds. The wound of entrance was about two inches from the median line and just below the spine of the scapula. On admission, about thirty minutes after the shots were fired, the man was suffering from the effect of the loss of a large quantity of blood. There was no radial pulse. The abdomen was opened through a right rectus incision. The bladder and abdominal cavity were full of blood. The wound in the liver could not be reached until the lower costal cartilages were cut and retracted upward. The wound of exit of the bullet in the liver was large enough to admit the tips of three fingers. From this the blood spurted in large jets. By passing the fingers underneath the liver the wound of entrance was located. To control the hemorrhage an attempt was made to utilize the greater omentum to plug the opening. This was found inadequate, and a yard of iodoform gauze was drawn through the liver, from before backward. This, with the omentum, which was plugged into the large, flaring wound of exit, controlled the hemorrhage completely. The abdominal cavity was partially cleared of blood, when the wound leading from the kidney was seen. From this blood flowed freely into the peritoneal cavity. The wound in the anterior abdominal wall was closed, the patient turned on his left side, and the kidney exposed by a lumbar incision. A large tear was found in the kidney, extending from the convex surface through just below the hilus, and opening the pelvis. The condition of the patient did not justify a nephrectomy. The hemorrhage was therefore controlled by packing with iodoform gauze. During the operation the patient was given a quart and a half of salt solution, containing a dram of 1 to 1,000 solution of adrenalin. A hurried examination of the patient before taking him from the operating room revealed the presence of fluid in both pleural cavities and a hematoma of small size beneath the skin around the wound of exit of the bullet that penetrated the left side of the chest. The bladder was irrigated and a large quantity of fluid and clotted blood removed. The patient returned to the ward with a fairly good pulse of 160.

The progress of the case was extremely satisfactory for ten days. A small quantity of bloody urine escaped from the

kidney wound during the first three days. The gauze packing in the liver was removed on the third day and a small tubular drain substituted for it. Except at the point of drainage, the abdominal wound healed by primary union. The tubular drain was removed from the liver on the eighth day. On the tenth day the patient complained of a feeling of numbness in the left hand. The night preceding he had coughed violently and had expectorated a good-sized clot of blood. Examination revealed a swelling, pulsating and expansile, just below the left clavicle, and extending in the axilla. At this time the swelling was about the size of a small orange. The left radial pulse was absent. The tumor increased rapidly in size. The left hand was distinctly cooler than the right and the feeling of numbness was increasing. At the end of forty-eight hours, in spite of compression, the tumor had nearly doubled in size, and a distinct bruit could be heard over the swelling, which still retained its expansile characteristic. The diagnosis of aneurism of the left subclavian, probably beginning at its outer third, was made and ligation decided upon. On the twelfth day after the injury the operation was performed. The usual incision for ligation of the three portions of the subclavian was made. Difficulty was encountered in finding the artery. To facilitate this three inches of the clavicle was resected. In making an attempt to ligate the vessel the aneurismal sac was ruptured. This was followed by a profuse hemorrhage, which was controlled by plugging the proximal portion of the artery with the left index finger of the operator. It seemed inadvisable, owing to the condition of the patient, to attempt to ligate the vessel proximal to the aneurism, so an eight-inch forceps was passed along the index finger in control of the hemorrhage and clamped in the proximal portion of the vessel. The distal portion was ligated and the aneurismal sac opened freely, the clots turned out and the cavities packed with gauze. The forceps were removed from the artery on the third day following. Gangrene of the hand and forearm followed, necessitating amputation at the elbow.

After this the patient rapidly recovered and is now out of the hospital.

Gunshot Wound of Chest and Spleen; Splenectomy and Recovery

DR. A. E. HALSTEAD: A man, aged 34, was admitted to St. Luke's Hospital Oct. 5, 1908, *in extremis*, suffering from a self-inflicted gunshot wound of the left chest. The weapon used was a cheap 38 caliber revolver. The bullet wound was just below the lower margin of the third costal cartilage and half-way between the mammary and midsternal lines. On examination the patient appeared to be *in articulo mortis*. No radial pulse could be felt. On auscultation over the precordia only the faintest heart tones could be heard. The thorax was rapidly opened through a curved incision below the fifth costal cartilage. A flap of soft tissue with fifth and fourth costal cartilages was turned up after the cartilage had been divided at both ends of the incision with a bone forceps. The pericardium was exposed. A wound of the pericardium, an inch in length, extending down and back through its lower part, was found. Below a wound that would admit four fingers was found in the diaphragm; through this the greater omentum had become dislocated and had entered the pericardium. After removing the omentum and a few clots of blood the pericardium was sutured with fine catgut. Through the lid in the diaphragm blood flowed freely from the abdominal cavity, the thorax was cleaned of blood, and the diaphragm sutured from its convex side, with a running suture of Pagenstecker linen. The abdominal cavity was then opened through a left rectus incision and the spleen explored. This was found broken into several fragments. The lower costal cartilages (6 to 7 inches) were cut in line with the abdominal incision and reflected outward, giving ready access to the spleen, which was removed after ligation of the vessels at its hilus. The fundus of the stomach had been deeply grooved by the bullet cutting through the peritoneal and muscular coats, but apparently not opening this viscus. This wound was closed by a running suture of linen, and the blood in the abdominal cavity was removed and the wound closed by interrupted through and through sutures of silkworm gut. No drainage was used. The patient made a rapid recovery without any untoward symptoms which could be attributed to the removal of the spleen. The leucocyte count during the first six days ranged from 14,000 to 18,000 and then dropped to normal. No change was noted in the lymph glands.

DISCUSSION

DR. L. L. MCARTHUR: I have had four or five cases of simple hemorrhage of the kidneys to deal with, and in each case it was quite feasible to check the hemorrhage by opening the kidney and packing it.

DR. A. E. HALSTEAD: I had a case several years ago in which a diagnosis of stone in the kidney was made. The patient, a woman, had had profuse hemorrhages at intervals of two or three months. I opened the kidney, expecting to find a stone, but found a cavernous angioma projecting into the pelvis of the kidney, which was removed. I excised a portion of the kidney with the tumor and sutured the kidney. The patient made an uneventful recovery. Cavernous angioma of the kidney may be a possible source of hemorrhage.

DR. E. WYLLYS ANDREWS: Wounds of the diaphragm nearly always cause traumatic hernia, and I, as well as other surgeons, have made the mistake of dealing with a number of them from the peritoneal side. Nearly every wound of the diaphragm ought to be repaired by opening the pleural cavity.

DR. DANIEL N. EISENDRATH: I wish to endorse the great advantage of tamponnade for gunshot wounds of the liver. In one case it took twenty-five yards of gauze to control the hemorrhage. The patient recovered, barring the complication of empyema, which required opening later on.

DR. A. E. HALSTEAD: In wounds of the liver, particularly of the left lobe, I have used the great omentum in gunshot wounds, plugging the opening with it. I tried this in the first case reported, but the wound was too large and the omentum was not large enough to control the hemorrhage. It could only be controlled by gauze packing.

DR. EMIL RIES narrated the case of a man who came to him with hematuria:

Cystoscopic examination showed that blood came from the left ureter, not from the right. In this case I split the kidney, but found nothing—no tumor, no stone. I decapsulated the kidney, and in three days the hematuria ceased. If I had lost track of this man I might have thought him cured, but he returned a year later with hematuria again. Cystoscopic examination again showed that blood came from the left kidney. I extirpated this kidney and found no trace of a pathologic process except a hemorrhagic nephritis. The man has been well since.

DR. WILLIAM E. SCHROEDER: Removal of the kidney for simple hemorrhage is a procedure quite out of proportion to the condition, and the only excuse for removing it would be uncontrollable hemorrhage after opening it and packing it.

DR. E. W. ANDREWS: Can any of the members of the society report a case of hematuria following the use of urotropin?

DR. A. H. FERGUSON: To one patient I gave fifteen grains of urotropin, three or four times a day, after a nephrotomy for hemorrhage, because there was suppuration in the wound, and I thought it would aid materially in getting rid of the pus. Instead, however, it caused hematuria from both kidneys.

Tuberculosis of the Kidney in the Male and the Female

DR. A. D. BEVAN: In a series of more than 5,000 postmortems 3 per cent. of the patients were found to have tuberculous lesions of the kidney, and of a large series of postmortems of individuals dying of tuberculosis 10 per cent. were found to have tuberculosis of the kidney. In the treatment three methods have been advocated. First, general hygienic treatment, which is employed in lung tuberculosis; second, specific treatment with tuberculin; third, surgical treatment. General hygienic treatment is of great importance, as in all cases of tuberculosis. Fresh air, proper nutrition, and rest

are of much value and should always be insisted on. Specific treatment with tuberculin is at present on trial. Regarding the surgical treatment, primary nephrectomy for early unilateral kidney tuberculosis can be done with less than 10 per cent. of mortality. In Kümmel's last series of 69 cases the mortality was only 2.7 per cent., and with the prospect of curing about 80 per cent. of the patients. In the light of present knowledge we must conclude that in unilateral renal tuberculosis early nephrectomy is the best treatment. This should be combined with the well-recognized hygienic treatment of tuberculosis. In bilateral renal tuberculosis the treatment should be hygienic plus possibly specific treatment with tuberculin until at least its value has been proven or disproven, and, when especially indicated, such palliative, surgical measures as nephrotomy and drainage.

DISCUSSION

DR. L. L. MCARTHUR: Tuberculosis of the kidney, like the acute infections, is usually unilateral. It has been my experience to find tuberculosis of the kidney much more frequently on the left than on the right side, and all my cases, except two, have been in females. Removal of the tuberculous focus in the kidney will most frequently cure the tuberculosis of the ureter and bladder. I have observed a number of times that the mere removal of the tuberculous kidney has sufficed to relieve the bladder condition. In a case in which a bilateral tuberculosis obtains, as shown by segregation of the urine and the detection of tubercle bacilli, the vaccine treatment offers as good prospects of results as any treatment yet advised.

DR. M. L. HARRIS: I have operated on several patients with bilateral tuberculosis with increasing favorable results. Tuberculosis of the kidney is usually a unilateral affection, and it only becomes bilateral at some subsequent period. In that case there must be a time when bilateral tuberculosis occurs, when one kidney is more extensively involved than the other, and if we get a case when the second kidney is not extensively implicated the removal of the kidney which is the more extensively involved will result in a cure. A patient from whom he removed the kidney on one side over three years ago for extensive bilateral tuberculosis is still well and in a good state of health. He does not take the doleful view of bilateral tuberculosis that he formerly did.

DR. A. H. FERGUSON: In a case of tuberculosis of both tubes, with tubercle bacilli coming from the kidneys, when the tuberculous tubes were removed, the tubercle bacilli from the kidneys disappeared. It is possible to have tubercle bacilli in the urine without the kidneys being involved, consequently a careful examination should be made of the different organs for a primary tuberculous focus.

DR. A. J. OCHSNER: I agree with Dr. Harris that in a number of apparently hopeless cases—cases of bilateral tuberculosis of the kidney—the patients have recovered and have remained well for many years after the removal of the more extensively involved kidney. This fact has induced me to look on these cases in a more hopeful way than formerly.

DR. VICTOR J. BACCUS: Two years ago Albarran reported his experience and observation in eight cases in which albumin was found in the urine of the remaining kidney in renal tuberculosis. The amount of albumin found in the urine varied from 0.5 per cent. to 0.75 per cent. The kidney although secreting albumin, did not show by the urine any pathologic changes, and the patient was in perfect health. This may be explained on the basis that the kidney, although not tuberculous, has been injured by the toxin of the diseased kidney, and has never regained its primary physiologic function.

DR. EMIL RIES: The only case of bilateral tuberculosis of the kidney in which I obtained anything like a favorable result was one in which I operated nine years ago. In this instance, there was tuberculosis of the bladder and extensive tuberculosis of one kidney. One kidney discharged quantities of pus and tubercle bacilli. From the other kidney there came turbid urine, but only a few tubercle bacilli and a small quantity of pus. I removed the badly diseased kidney with the ureter down to the bladder. The patient never had completely clear urine, but was nevertheless able to attend to her work and to enjoy life.

DR. L. FEINGOLD: I do not think that, after removing the badly infected kidney, the apparent cure of the other kidney results from the fact of the diseased kidney having been removed, but that tuberculosis being a slow chronic infection, the comparatively healthy kidney undergoes a compensatory hypertrophy and becomes accustomed to doing the work of both kidneys.

DR. GUSTAV KOLISCHER: One of the primary symptoms in tuberculosis of the kidney is frequency of urination. This is especially true in young women and girls, and when this symptom is present in such patients and other symptoms can be excluded the physician should think of tuberculosis of the kidney. Another symptom is a change in the ureteral orifice, which has a slit or a cleft in it. Tuberculosis becomes a certainty if in the neighborhood of the ureteral opening ulceration or infiltration is found. Three years ago I made a diagnosis of tuberculosis of the kidney in a young girl by draining one kidney and finding the urine infested with tubercle bacilli, while the other kidney was apparently normal. I removed the tuberculous kidney, and the woman recovered, but a fistula remained. I saw the same patient in consultation. The family physician thought of all kinds of extensive operations which I did not advise. This woman was subsequently cared for by Dr. McArthur, who applied the vaccine treatment, with the result that the fistula closed inside of two weeks.

Acute Postoperative Dilatation of the Stomach and Duodenum

DR. WILLIAM E. SCHROEDER: Experimentally, I have been able to produce dilatation of the stomach on cadavers by slight traction on the mesentery. In the acute cases the onset is sudden. There is vomiting, pain and passage of flatus. The vomiting may be fecal. The abdomen is distended, especially in the epigastric region; succussion is present. The temperature rises; the pulse ranges from 145 to 160. Collapse may follow. In the chronic cases the onset is slower, but otherwise the clinical picture is the same as in the acute cases. The prognosis is bad, in that 70 per cent. of these patients die if left to themselves; with treatment they do much better. Treatment consists of rectal feeding, elevation of the foot of the bed and washing out of the stomach every three or four hours.

DISCUSSION

DR. E. WYLLYS ANDREWS: Since several members of the society have reported cases of postoperative dilatation of the stomach, and since the *résumé* given in 1895 of forty cases, they have all come to realize the appalling condition from its suddenness and from the fact that surgeons are more or less responsible for deaths which are preventable, not only general practitioners, but surgeons who let patients die on their hands. Perhaps sepsis plays a part in acute dilatation of the stomach, but this condition can not be distinguished always from postoperative ileus. If the condition is identically like that of postoperative ileus, clearly one can do very little harm, but may do good by washing out the stomach in every case of suspected postoperative ileus or acute dilatation.

DR. A. E. HALSTEAD: I have had two cases of acute postoperative dilatation of the stomach, both terminating fatally.

DR. A. J. OCHSNER: I recall a case of gastroenterostomy for pyloric obstruction due to cicatricial tissue formation following an ulcer of the pyloric end of the stomach, the patient having apparently recovered. Two or three days afterward, while sitting up, she suddenly complained of pressure, and immediately her pulse increased rapidly, and in an hour she was dead. Postmortem examination showed that a kink at the point of attachment of the jejunum caused closure and the stomach crushed the heart until the patient died of pressure on the heart. I have a standing order in the hospital now that if there is any distention of the stomach, any vomit-

ing after operations, the stomach is to be washed out regularly.

DR. L. E. FRANKENTHAL: I wish to direct attention to the absence of feces in the vomit in cases of dilatation of the stomach. This is one of the chief differential signs, and should lead to an early recognition of the trouble.

PHILADELPHIA COUNTY MEDICAL SOCIETY

Regular Meeting, Jan. 27, 1909

The President, DR. FREDERICK P. HENRY, in the Chair

Pre-Columbian Syphilis in America

DR. FRANCIS D. PATTERSON: The origin of syphilis is of necessity shrouded in obscurity by reason of the failure in early times to differentiate not only between syphilis and gonorrhea, but also between syphilis and other skin diseases which simulate it. That venereal disease existed in Biblical times is verified by the many references to it in the Bible. Syphilis was unknown in Europe prior to the return of Columbus, according to Diaz de Isla, who was engaged in active practice in Barcelona in 1493. He found at Barcelona a number of the sailors from Columbus' fleet who suffered from the disease. The first remarkable discovery of evidences of pre-Columbian syphilis in the United States was made by Jones, whose report will be found in the contributions of the Smithsonian Institute for 1876. He describes the results of his investigations in mounds and graves in Tennessee, where he found numerous skeletons presenting the evidences of the ravages of syphilis. The skulls show the average Indian features and he believes them to be pre-Columbian specimens. All authorities are agreed that the bones most affected by syphilis are those most subject to trauma in the following order: the tibia, clavicle, cranium, ulna, sternum and ribs.

The Modern Treatment of Syphilis

DR. H. M. CHRISTIAN: I desire to enter a protest against the spirit of pessimism so prevalent in the profession regarding the curability of syphilis. I believe that syphilis occurring among the upper and middle classes in individuals endowed with good health and fairly good habits, if seen early in the secondary stage of the disease and promptly and properly treated, can be cured in the majority of cases. When tertiary symptoms have once developed a permanent cure can not be promised. In view of the general acceptance of the *Spirochæta pallida* as the cause of syphilis in cases in which it is absolutely determined to be present in a given lesion it may be well to begin the administration of mercury at once without waiting for the appearance of cutaneous manifestations. The chief methods of administering mercury in syphilis are: (1) Internal treatment; (2) inunctions; (3) hypodermatic medication. In 50 per cent. of the cases of syphilis benign in character, the internal administration of mercury for the first year and a half is all that is required, the preparations employed being the protoiodid gr. ⅓, mercury with chalk gr. 1 and the bichlorid of mercury, gr. 1/12. Of these the protoiodid is the most efficient. In cases in which the drug can not be tolerated by the mouth or in which prompt action is needed a course of from 20 to 30 inunctions daily with one dram of blue ointment should be employed. When it can be employed such a course is preferable at the outset of every case of syphilis. I have not yet been convinced of the utility of hypodermic medication in the routine treatment of syphilis. In the treatment of tertiary syphilis some preparation of iodin in combination with mercury still remains the popular and most reliable form of treatment. The claims made for atoxyl in the treatment of syphilis have not yet been clinically verified.

Syphilis in Its Relation to Nervous and Mental Diseases

DR. ALFRED GORDON: The relation of syphilis to nervous diseases may be direct or indirect. To the latter group belong the so-called parasyphilitic diseases, examples of which are seen in tabes and paresis. When the syphilitic poison produces a direct effect the result is either central syphilis, spinal syphilis or a more frequent condition, cerebrospinal syphilis. While mercury and iodids may yield satisfactory and sometimes admirable results, nevertheless too much reliance should not be placed on them. The general measures play an extremely important rôle in treatment of syphilitic affections of the nervous system. Favorable results are sometimes obtained when the treatment is begun in the earliest stages of syphilitic diseases. Preventive medicine is said to be the most important. The ravages produced by syphilis on the nervous system are to be dreaded, as it threatens the community with a population of imbeciles, idiots, epileptics, tabetics and paretics.

Medicolegal

Impending Paresis, Loss of Memory and Insanity

The Supreme Court of Missouri, Division No. 2, sustains, in the perjury case of State vs. Coyne, an assignment of error in the exclusion of evidence tending to prove that, down to a date recently before the alleged false swearing, the defendant apparently stood on the brink of paresis, and that his memory was wholly unreliable. The question was: Did the defendant have the right to show to the jury that he was in a condition bordering on paresis, or a partial paralysis affecting his muscular motion, due to a disorder of the central nervous system, and that this had so affected his memory that he was known in the ordinary transactions of business to forget one day what had occurred the day before or a week before? The court thinks that in ascribing the offer of this evidence to an attempt to prove insanity, either total or partial, the purpose of the evidence was misapprehended, and that an instruction in withdrawing it on that ground from the jury was erroneous.

The purpose of the testimony offered and excluded was not to establish that the defendant was insane, but that owing to disease and nervous disturbances he had evinced a great loss of memory, up to a certain date. This testimony was not for the purpose of showing that he was either wholly or partially unable to appreciate the moral or physical consequences of an act, but to show that his memory was wholly unreliable, and this not by himself, but by other witnesses who had occasion to observe his conduct independent of this charge. The court can not see any reason why it was not competent for the defendant to introduce this testimony as tending to show the jury that notwithstanding they might believe beyond all doubt that he did in fact solicit employment from certain persons to aid them in getting their ordinances through, still that owing to this failure of memory he did not recall and did not remember, at the time, these propositions to them. The indictment and the plea of not guilty tender the issue to the jury whether the defendant honestly believed, as he stated, or whether honestly he did not recall, those visits.

"Memory," says Sir William Hamilton, "is the power of retaining knowledge in the mind; the mental power of recognizing past knowledge." That men may and do have what is denominated unsound memories, although otherwise of sound mind, is a matter of common knowledge. It is most generally observable in persons of old age, who have lost the power to remember past events, but no one would class them as insane persons. That such a person might do an act and be perfectly conscious of it, and of its moral and legal effect, and yet forget it, the court takes it is not open to dispute. Of course, it would be for the jury to credit or discredit this testimony, and believe or not believe it, as it appeared reasonable or unreasonable to them; but the question here was one of the competency of the evidence.

Releases Relative to Opinions in Injury Cases

The Supreme Court of Iowa says, in the personal injury case of Mason vs. Chicago, Rock Island & Pacific Railway

Co., that it is elementary that a person who has suffered injury through negligence of another may for a valid consideration effectually release and discharge his right of action for damages. But an agreement of settlement or release, obtained from an injured person in the absence of independent counsel or advice, should be and will be scrutinized by the court with great care, and on proof of any fact or facts fairly tending to show fraud or unconscionable advantage in obtaining it, a finding by the jury which holds such settlement of no effect will not be disturbed. However, where a surgeon in the employ of defendant company gave assurances of an early recovery which proved incorrect, in the absence of some fact or circumstances justifying the conclusion that they were fraudulently made to deceive or mislead the injured man as to his real condition, and thus aid the company in obtaining an advantageous settlement with him, the fact that he relied thereon in executing the release afforded no ground in law for avoiding its effect. The court adds that it must not be understood as holding that expressions of professional opinion by a surgeon in the employment of a party charged with the responsibility for a personal injury, when made to the injured person for the purpose of inducing a settlement of his claim for damages may not constitute fraud and false representations, but the court does hold that to justify the conclusion of fraud something more must be shown than that the opinion or representation has been proved incorrect.

Tests and Declarations to Physicians

The Supreme Court of Illinois says that the case of Shaughnessy vs. Holt was brought by the plaintiff to recover for personal injuries alleged to have been sustained by her while a passenger in the defendant's elevator. One of the plaintiff's claims was inability to detect sensations on part of her left leg. Three physicians who testified for her, stated that they had made tests on her person by taking two test tubes, putting hot water in one and cold water in the other, and that they touched with the test tubes different parts of her skin, and she did not always answer correctly which tube was hot and which was cold; that there was a lack of sensitiveness in one leg; that such symptoms showed a deterioration of her nervous system indicating nervous prostration or neurasthenia. All of these physicians made their tests very shortly before the case was called for hearing, apparently for the purpose of testifying at such hearing. It was insisted by the defendant that this testimony was based on self-serving statements of the plaintiff, and was therefore incompetent and inadmissible. And the court holds that the admission of this testimony was reversible error.

It is the established rule in Illinois, the court says, that the declarations of the injured party in a case like this, when made as a part of the res gestae (essential circumstances of the case), or to a physician during treatment or on an examination prior to, and without reference to the bringing of, an action to recover damages for the injury complained of, may be introduced in evidence. The law admits in evidence the declarations of the injured party as to the physical condition given to a physician during treatment because it is presumed that the injured person will not falsify in his statements made to the physician, when he expects and hopes to receive medical aid, but no such presumption arises when he is examined by an expert for the purpose of giving evidence in a case about to be tried.

The res gestae referred to under this rule relates only to the main fact or transaction. This main fact in this case was the accident itself, and not the experiments as to the plaintiff's physical condition many months after.

Physician's Liability to Husband for Breach of Contract to Attend Wife

The Supreme Judicial Court of Massachusetts says that the question intended to be raised by the defendant's demurrer to the declaration, and the question principally discussed at the argument in the case of Sherlag vs. Kelley was whether, under an action of contract brought on the implied agreement of a physician with a husband to render necessary and proper medical care and service to his wife in her illness, a recovery can be had for the husband's loss of her society, care and comfort resulting from her death caused by the defendant's failure to perform his contract.

For many years it has been held in Massachusetts that, without a statutory provision, no recovery can be had for the death of a person, however wrongfully caused by another. The decisions exclude, as a ground of recovery, all elements of damage which arise solely from death.

But the whole subject is now covered by statutes, of which some apply only to deaths caused by certain corporations or classes of persons, as railroad and street railway corporations, common carriers and employers of labor, and one is general, applying to all other corporations and persons. This last statute covers death by negligence, whether the relations of the parties are such that there is a breach of an express or implied contract, or whether the duty neglected arises outside of any contract. The remedy given by it is exclusive of any other in the cases to which it applies; and, if the present plaintiff had brought his action seasonably, he would have been entitled to a recovery under it.

If, through a breach of the defendant's contract, there was an injury to the plaintiff's wife that caused him damage, he could recover for it in an action of contract, notwithstanding that it finally resulted in her death. If he was caused additional expenses for her nursing, care and treatment by the defendant's failure to perform his contract, he was entitled to damages. The fact that his wife subsequently died from the same cause was immaterial.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Boston Medical and Surgical Journal

February 18

1 The Emmanuel Movement. C. D. Young, Rochester, N. Y.
2 Mutual Relations of Prosecuting Officers and Medical Examiners. H. Parker.
3 *Criminal Abortion. G. S. Taft.
4 *Aloin or Guaiac Test for Blood Depends Solely on the Iron Contained in Its Hemoglobin. W. F. Whitney, Boston.

3. **Criminal Abortion.**—Taft discusses House Bill 247, 1906, of the Massachusetts Legislature, with particular reference to what constitutes being an "accessory after the fact" and its relation to the professional secret. He points out that the question of the inviolability of disclosures by patient to a physician differs in different states (in Massachusetts the physician may be compelled to testify in court concerning them), but that, in any event, while a physician may be under no legal obligation to disclose what he might discover or suspect regarding abortion, and may take care of the victim, yet any action done to prevent the detection or conviction of the abortionist renders him an accessory. Such an action, for instance, is the destruction of the fetus, or of the catheter or other means used to procure abortion.

4. **Aloin or Guaiac Tests for Blood.**—Whitney discusses the chemistry of these tests, and concludes that the aloin and guaiac tests are not tests for blood, but simply for its iron, and are utterly valueless for suspected stains on any iron article, such as a knife, etc. Their chief value is a negative one.

Medical Record, New York

February 20

5 Prostatectomy. J. B. Deaver, Philadelphia.
6 *Case of Acromegaly with Thrombophlebitis of the Superficial Veins. J. Phillips, Cleveland, O.
7 Free Suppurative Peritonitis. A. E. Isaacs, New York.
8 Danger Signals in Inflammations of the Ear. W. A. Wells, Washington, D. C.
9 Paramyoclonus Multiplex (Friedreich). E. M. Van Buskirk and A. Kane, Fort Wayne, Ind.
10 Treatment of Amebic Infection. M. B. Saunders, Waco, Tex.

6. **Acromegaly.**—Phillips describes an interesting case of acromegaly which was accompanied by thrombophlebitis of the superficial veins. He discusses the subject in general and

the theories advanced as to the essential cause of acromegaly. Most observers believe it to be associated with alteration in the function of the pituitary body by way either of suppression, hypersecretion, or perverted function. The pathologic changes in the glands point quite strongly to the hypersecretion theory. His general conclusions are practically as follows: Enlargement of the heart, either simple or associated with a myocarditis, is the condition usually found in acromegaly. Sclerosis of the arteries and degenerative lesions affecting the walls of the veins, with dilatation and subsequent obliteration of their lumen, are constantly present. These changes in the heart and vessels should be considered as much a part of the clinical picture as the changes in the bones, and they are probably due to the prolonged hypertension of the vessels, the result of hypersecretion of the pituitary body.

New York Medical Journal

February 20

11 Is the Human Body Supplied with an Autoprotective Mechanism? C. E. de M. Sajous, Philadelphia.
12 Drugs That May Be Used with Benefit to Gynecologic Patients. H. H. Boldt, New York.
13 *Genitourinary Complications of Typhoid. E. J. G. Beardsley, Philadelphia.
14 Salivary Calculi, with Report of a Case. R. E. Davison, Pittsburg.
15 *Value and Reliability of Calmette's Ophthalmic Reaction to Tuberculin for Diagnosis of Tuberculosis and Differentiation of Tuberculous Lesions from Other Diseases in Infants and Young Children. E. M. Sill, New York.
16 *Starch in Urine, Amyluria. I. S. Wile, New York.
17 Asthma a Nasal Disease. J. H. Egbert, Willimantic, Conn.
18 Common Forms of Gastroenteritic Neuroses. Etiology and Treatment. A. Bassler, New York.
19 New Operation for Ingrowing Toenail. W. L. Keller, Manila, P. I.

13. **Genitourinary Complications of Typhoid.**—Beardsley enumerates and discusses the following genitourinary complications of typhoid: retention of urine, polyuria, albuminuria, pyuria, hematuria, hemoglobinuria, urobilinuria, bacilluria, infarcts and abscess of the kidneys, nephritis, pyelitis, cystitis, epididymitis and orchitis, oöphoritis and salpingitis, gangrene of the genitals, menstrual distrubances, abortion, miscarriage or premature labor, and mastitis.

15. Abstracted in THE JOURNAL, Nov. 7, 1908, p. 1626.

16. **Amyluria.**—Wile states that the presence of starch granules in the urine has been noted by various observers, and that the general opinion has been that the presence of these granules in the urine has been accidental, resulting from contamination by dusting powder, underwear, etc. He reports observations to disprove this theory and to establish the existence of a true amyluria, or the passage of starch granules through the kidney into the urinary secretion. He summarizes briefly the literature on the subject and gives the following résumé of his preliminary observations:

1. Starch granules are absent in the urine of breast-fed infants.
2. Starch granules are frequently present in the urine of infants fed on carbohydrate food.
3. The degree of amyluria varies with the nature and preparation of the food, the quantity ingested, and the condition of the individual.
4. Starch in urine at times gives a reaction simulating that of albumin.
5. Starch passing through the kidney may cause albuminuria with casts.
6. Amyluria does exist, and starch in the urine is not necessarily of extraneous origin.

Lancet-Clinic, Cincinnati

February 20

20 Indications for and Technic of Internal Urethrotomy. F. C. Valentine and T. M. Townsend, New York City.
21 Antiseptic Midwifery. E. J. Kehoe, Cincinnati.
22 Mixed Tumors of the Parotid Gland. A. H. Cordier, Kansas City, Mo.

Archives of Diagnosis, New York

January

23 Serious Heart Lesions without Persisting Physical Signs. H. L. Elsner, Syracuse.
24 *Early Diagnosis of Infantile Scorbutus. H. Koplik, New York.
25 Variations from Type in Surgical Diseases of Kidney. J. B. Deaver, Philadelphia.
26 Early Diagnosis of Tuberculous Affections of the Apices of the Lungs by Roentgenography. F. M. Groedel, Bad-Nauheim, Germany.
27 Malignant Disease of the Lung with Report of a Case of Primary Sarcoma. H. E. Lewis, New York.
28 Diagnosis of Carcinoma of the Esophagus by the Roentgen Rays. G. Pfahler, Philadelphia.
29 Differential Diagnosis of Malignant Disease of the Pancreas and the Biliary Tract. C. G. Cumston, Boston.
30 Diagnosis of the Presence of Predisposing Conditions Favoring the Establishment of Otorrhea. W. S. Bryant, New York.
31 Differential Diagnosis Between Neurasthenia and Some Affections of the Nervous System for Which it is Often Mistaken. T. A. Williams, Washington, D. C.
32 Hematomyelia, and a Case of Syringomyelia. A. A. Eshner, Philadelphia.

24. **Infantile Scorbutus.**—Koplik emphasizes the importance of early diagnosis of infantile scorbutus. The picture of the affection, as outlined in the text-books, is one which applies to cases in which the disease has gained full headway; the patient has suffered for some length of time and has developed the full symptomatology of the disease. The disease follows invariably in the wake of some error of nutrition, or, in artificially fed infants, on an error in the composition of the food, wholesome or otherwise, or in its treatment after having been made up for the infant. Cases also occur in breast-fed infants when the breast milk may have had a denutritional composition, or in infants partaking of raw milk, excellent in itself, but given to the infant in a denutritional state. This should always be borne in mind, as the physician is apt to reject the possibility of scorbutus if the infant is taking raw milk. Many infants taking sterilized food never develop symptoms of scorbutus, and in others symptoms may be held in abeyance by the administration of fruit juices. It is exceedingly uncommon to see the disease in infants before the age of 5 months. Koplik believes, therefore, that scorbutus may develop in any infant whose food is, or has been, constructed on denutritional lines. The first signs of latent or incipient scorbutus are a mild form of anemia, pain in the bones and joints only elicited by pressure or manipulation, and the appearance of blood in the excretions or in the vicinity of the bones or periosteum. It is not an uncommon experience to see scorbutus in infants, at about the sixth month of life, who are apparently thriving, and who give absolutely no symptoms such as would lead one to suspect any scorbutic tendency. In such infants the teeth may not have erupted. Deep pressure on the tibiæ will cause these children to wince, as if there were some tenderness of the bone. Formerly this was interpreted as being due to rickets. Such infants may be rachitic, but the tenderness in question is scorbutic. The test of the correctness of this supposition, in the face of the absence of any symptoms otherwise of scorbutus, is the rapid response of such infants to a change in the diet toward warding off the full development of scorbutus.

Archives of Internal Medicine, Chicago

January

33 Intestinal Lesions Caused by *Trichinella spiralis* in Rats. C. Frothingham, Boston.
34 *Use of Cerium Oxalate for Relief of Vomiting. G. Baehr and H. Wessler, New York.
35 Relations Between Bilirubinemia, Urobilinuria and Urobilinemia. L. A. Connor and J. C. Roper, New York.
36 *Pellagra and Pellagrins. J. H. Randolph, Chattahoochee, Fla.
37 Fever. W. G. McCallum, Baltimore.

34. **Cerium Oxalate for Relief of Vomiting.**—Baehr and Wessler discuss the widely prevalent use of cerium oxalate, the many years during which it has held a conspicuous place in the pharmacopeia, and the disagreement among physicians regarding its therapeutic value, and give in detail their experiments to determine its real worth. They carried out animal experiments (a) to determine the toxicity of cerium oxalate and the oxalates of lanthanum, neodymium, praseodymium and thorium; (b) to determine the effect of commercial cerium oxalate on vomiting induced with apomorphin hydrochlorid and ipecac; (c) to determine the effects of cerium nitrate on vomiting induced with apomorphin hydrochlorid; (d) to determine the general effects of cerium nitrate on the body and also of the paths of excretion of cerium from the organism. They arrived at the following conclusions:

1. Commercial cerium oxalate is non-toxic.
2. Cerium oxalate has no inhibitory effect whatever on vomiting of central origin.
3. Cerium oxalate may inhibit vomiting due to local irritation of the gastric mucosa, but only if given in large doses for some time, so as to coat the stomach wall pretty generally.
4. Cerium oxalate is not absorbed from the gastrointestinal tract.

These four propositions complete a very close analogy between cerium oxalate and bismuth subnitrate. Both salts are insoluble, and, because of this property, neither is absorbed from the gastrointestinal tract. This latter fact, in the case of bismuth, has resulted in its use for various disorders of the alimentary canal, but, so far as the literature furnishes any evidence, the use of cerium oxalate has been directed, in great part, against the reflex vomiting of early pregnancy, a condition in which no one would rationally think of using bismuth. It certainly seems reasonable to suppose that cerium oxalate ought to prove efficacious in alleviating all those conditions for which bismuth is at present used; in other words, those in which a protective coating to the wall of the viscus is desired. In this respect, its use is at present extending; for instance, some men find it efficient for relieving the irritability of the stomach in alcoholic gastritis, others for allaying the gastric disturbances that occasionally manifest themselves in the course of infectious diseases. There is no reason for doubting its value in these and similar conditions, such as gastric ulcer, in which the vomiting is due to a local irritation of the mucous membrane. But in the doses that some men prescribe, 0.15 gm. to 0.20 gm., it can hardly be hoped that it will prove efficient. In view of the manner in which it now appears that cerium oxalate accomplishes its purposes, namely, mechanically, by coating the wall of the stomach, these doses seem ridiculously small. Cerium oxalate ought to be administered in doses comparable to those in which bismuth subnitrate is given.

36. **Pellagra and the Pellagrins.**—Randolph defines pellagra as a systemic intoxication, associated always with the ingestion of maize or maize products, and characterized by a triad of symptoms (gastrointestinal, cutaneous and neuropsychic), with marked tendency to seasonal recurrences, exhaustion and death. The term "pellagrin" is applied to those affected with the disease, particularly when the mental or nervous symptoms predominate. Pellagrous insanity has been recognized as one phase of the symptoms in the course of the disease almost as long as the disease itself. Randolph goes at some length into the historical distribution of the disease, the etiology, pathology, symptomatology, diagnosis, prognosis and treatment. A typical case of the disease presenting the triad of symptoms, dermatitis, diarrhea and depression, occurring in a section where the disease is known to prevail, and where the history of a maize diet can be established, should present no difficulty; but in the prodromal stage, or when the cases are ill defined and atypical, the matter may not be so easy. He discusses in detail the differential diagnosis from mild alcoholic intoxication; ankylostomiasis; skin lesions of various kinds, especially pemphigus, eczema and dermatitis venenata; ergotism, and pseudopellagra. He takes up also the differentiation of pellagrous insanity from dementia præcox, manic-depressive insanity and the various so-called terminal dementias which may lead to confusion from the psychiatric standpoint. Treatment is prophylactic and curative. Of the latter little can be said, as there is no known specific medicinal agent for this disease. Removal from unhygienic surroundings and improvement in diet are the best means of combating the condition. Milk, externally and internally, was used by the earlier practitioners, following the observations of Bouchard, that the cowherders in pellagrous districts escaped the disease. Arsenic and iron preparations have been much used, and potassium bichromate, alone or combined with corrosive sublimate (Hoch), has been said to give good results. Iodin undoubtedly exerts a beneficial influence on the cutaneous symptoms if applied in early stages of erythema. Hydrotherapy is of much service in the treatment of the mental and nervous condition. Silver nitrate has been found a valuable adjunct in the treatment of the stomatitis, but for the diarrhea little of value has been found, although opium in some form is generally used in efforts to control the same. Recently protargol has been recommended in doses of one-third grain daily. The serum treatment also has been tried, but further work along this line is needed and no doubt will be awaited with great interest. The author reaches the following conclusions:

1. Pellagra undoubtedly exists in the United States.
2. Whites are more susceptible than blacks. (This conclusion seems justified by the fact that in the institution from which these reports are taken all—both white and black—are under a common régime and partake of a common diet with similar hygienic conditions for both, so each race may be considered subject to the same etiologic factors, and the incidence of the disease has been 3 or 4 in the white to 1 in the negro.
3. The sexes seem equally affected. While the cases here reported are all from among the men, yet there have been an equal number of cases observed among the women, on which we may hope for a report in the future, when inferences may be drawn as to the resistant power in the respective sexes.
4. Previous alcoholic history affected the prognosis badly.
5. Mental and nervous symptoms prevail throughout the disease.
6. The disease is difficult to diagnose in the prodromal stage.
7. The mental symptoms are of polymorphous character, but the picture as a whole is undoubtedly one of a distinct disease, and a definite psychosis may with propriety be recognized in the symptoms of pellagrous insanity

Archives of Ophthalmology, New York

January

38 Analysis of Involuntary Eye Movements in a Case of Congenital Binocular, Lateral Nystagmus, from Photographic Records. R. Dodge and A. R. Diefendorf, New Haven, Conn.
39 Histologic Investigation of a Case of Blepharoconjunctivitis Caused by the Diplobacillus of Morax-Axenfeld. B. Pusey, Chicago.
40 Replacement of Incarceration of the Iris by Traction from Within the Anterior Chamber. F. C. Jameson, Brooklyn, N. Y.
41 Rhinogenous Optic Neuritis. M. Paunz, Budapest, Austria.
42 Rare Bacteriologic Conditions in Ulcus Serpens. Dr. zur Nedden.

Archives of Pediatrics, New York

January

43 *Report on One Thousand Tuberculin Tests in Young Children. L. E. Holt, New York.
44 Tics and Their Treatment. E. W. Scripture, New York.
45 Leontiasis Ossea Developing in a Child with Diabetes Insipidus; and the Problem of Etiology. L. C. Ager, Brooklyn.
46 Calorimetric Method of Infant Feeding. T. Telmer, Newark, N. J.
47 *Diagnostic Value of the Chemical and Bacteriologic Examination of Cerebrospinal Fluid. A. Hand, Philadelphia.
48 Urinary Infection—A Common Cause of Fever in Infancy and Childhood. M. J. Lippe, St. Louis.

43. Abstracted in THE JOURNAL, July 11, 1908, p. 157.

47. Abstracted in THE JOURNAL, July 4, 1908, p. 65.

Monthly Cyclopedia and Medical Bulletin, Philadelphia

January

49 Practical Suggestions in Administration of Tuberculin, Together with Discussion of Theory on Which its Action is Based. F. M. Pottenger, Monrovia, Cal.
50 Some Reflex Neuroses Cured by Treatment of Coexistent Nasal Affections. M. F. Butler, Philadelphia.
51 Use of Tobacco by the Immature. J. B. Huber, New York.
52 Congenital Unilateral Hypertrophy, Report of Case. C. H. Muschlitz, Philadelphia.
53 Is the Human Body Supplied with Autoprotective Mechanism? New Theory of Immunity Based on the Ductless Glands. C. E. de M. Sajous, Philadelphia.
54 Medical Missions. R. C. Thomas, Hollo, P. I.
55 Symptomatology and Diagnosis of Enlarged Prostate. H. M. Christian, Philadelphia.
56 Aids to Successful Results in Bassini Operation for Radical Cure of Hernia. E. LaPlace, Philadelphia.

Wisconsin Medical Journal, Milwaukee

January

57 Present Status of Medical Expert Testimony on Insanity. A Plea for Corrective Legislation. A Rejoinder. E. P. Vilas, Milwaukee.
58 Etiology, Pathology, and Treatment of Acute Chorea. G. H. Feliman, Milwaukee.
59 The Value of the Medical Society. E. Quick, Appleton, Wis.

Journal of the Indiana State Medical Association, Fort Wayne

January

60 Sketches of the Medical History of Indiana. G. W. H. Kemper, Muncie.
61 Plea for the Use of National Formulary and Pharmacopeia Preparations. F. H. Carter, Indianapolis, Ind.
62 *Chronic Myocarditis. R. H. Ritter, Indianapolis.
63 Treatment of Diabetes. G. D. Kahlo, French Lick, Ind.

62. **Chronic Myocarditis.**—Ritter divides the causative influences of this condition into the four following groups:

1. Mechanical. Persistent demands which necessitate all the power of the heart muscle to meet the demand constantly can hardly fail sooner or later to use up the resources of the muscle, produce true fatigue, and perhaps through impaired powers of metabolism degenerative changes come on and the muscle fibers are replaced by fibrous tissue. This cause, however, is so closely related to or accompanied by bad habits or insufficient food supply that its purely individual importance is hard to estimate.
2. Those cases in which the blood supply of the heart is insufficient for its proper maintenance.
3. Perhaps the most common and most important of all the causes are the metabolic disturbances in the muscle fibers produced by the constant presence in the blood of toxins or the presence for even a comparatively short time of some very virulent poison.

4. Extension of Inflammation into the myocardium from endopericardium and pericardium.
General vascular sclerosis, while one of the almost constant accompaniments of chronic myocarditis, is not easily classified.

Journal of Advanced Therapeutics, Rahway, N. J.

January

64 The Static Brush Discharge Concentrated to a Blue Pencil Point, and Some of its Uses. F. deKraft, New York
65 Possibilities of Radiant Light. T. D. Crothers, Hartford, Conn.
66 Bilateral Pleurisy Following Carcinoma of Breast. H. F. Pitcher, Haverhill, Mass.
67 Severe Pain During Menstruation Treated with Static Wave Current. W. T. Patch, Boston.
68 Results Obtained from the Use of the Blue Light. A. B. Dorman, Winthrop, Mass.
69 Cataphoric Operations as Modified by the Topographic Situation of Particular Neoplasms. G. B. Massey, Philadelphia.

Illinois Medical Journal, Springfield

January

70 Abuse of Medical Charities in Chicago. C. J. Whalen, Chicago.
71 Charitable Carpentry Movement of "Ogaclhc." E. L. Kenyon, Chicago.
72 Psychotherapy. G. A. Fuson, Harrisburg, Ill.
73 *Treatment of General Peritonitis Complicating Appendicitis. D. N. Eisendrath, Chicago.
74 Public Duties of Physicians. H. B. Hemenway, Evanston, Ill.
75 Clinical Types of Toxemia of Pregnancy. J. G. Campbell, Chicago.
76 Eclampsia. G. J. Hagans, Chicago.
77 *Toxemias of Pregnancy. Renal Insufficiency. A. G. Bosler, Chicago.

73. Abstracted in THE JOURNAL, June 13, 1908, p. 2015.

77. **Toxemias of Pregnancy.**—Bosler discusses in some detail the part played by renal insufficiency in the toxemias of pregnancy. He states that uremia and eclampsia are separate and distinct conditions, uremia implying a permanent discontinuance of renal functions and leading to fatal termination; eclampsia is not *per se* fatal, and recoveries are frequent and the changes of pregnancy kidney undergo resolution with complete recovery. Pregnancy, he asserts, does not produce a true nephritis. The pregnancy kidney is an acute fatty infiltration, a secondary consideration, due in all probability to the underlying toxemia. Kidney involvement with insufficiency as an etiologic factor in the production of toxemia and pregnancy has been overestimated. Hepatic insufficiency is more important and liver changes are more constant and characteristic than renal, and both depend on the underlying toxemia. The exact nature of this toxemia is not known, and many theories have been advanced in explanation. To Bosler there seem to be two factors: first, predisposing, and, second, exciting. The predisposing factors should be mentioned individually, with all the term implies, heredity, diathesis, etc., the liability of the individual to disarrangement, functional or otherwise, of certain organs of the body, especially the liver. Whatever the underlying predisposing condition in the individual, the exciting cause seems to be the impregnation of the ovule. With the growth of the ovum there is a marked change in the metabolic processes of the body, and increased activity of various organs, especially the liver. This occurs in all gravidæ and is physiologic. In any given case these physiologic changes, passing beyond a certain point, become pathologic. The liver, governing in a great measure the process of metabolism, is usually an overworked organ, and in pregnancy has an added burden, not only of increased metabolism on the part of the mother, but of caring for the nutrition and waste of the fetus as well. It is reasonable to presume that this excessive stimulation can and does lead to structural changes, seriously impairing the hepatic function. As a result we have perverted metabolic products, which, Bosler believes, constitute the basis of the toxemia.

California State Journal of Medicine, San Francisco

January

78 Skin Reaction After the Use of Tuberculin Ointment. H. E. Alderson, San Francisco.
79 *The Rose-Bradford Kidney. H. d'A. Power, San Francisco.
80 German Measles. E. Gray, Eldridge.
81 Bier Treatment in Surgical Diseases. A. W. Morton, San Francisco.
82 Intestinal Paralysis. E. G. McDonnell, San Francisco.
83 Question of Operative Interference in Acute Appendicitis. T. H. Blodgett, Tulare.
84 The Railway Hospital Association: Its Aims and Purposes. J. R. Colburn, Los Angeles.
85 Treatment of Traumatic Rupture of the Urethra. R. Brown, Santa Barbara.

79. **The Rose-Bradford Kidney.**—Power discusses the special form of fibrotic kidney, inflammatory in origin, having a pathology distinct from the granular contracted kidney of later life and presenting a quite distinct clinical evolution which is found in young subjects. This condition is linked with the name of Rose-Bradford, who described it in the Croonian lectures (*Lancet*, Aug. 6, 1904). Power quotes Rose-Bradford's description of the morbid anatomy and abstracts the symptomatology from Robson's paper in the *Practitioner*, February, 1908, which is recapitulated as follows: The disease occurs in young adults, and is markedly latent. Polyuria with much albumin, absence of edema, cardiovascular and fundus oculi changes, with a fatal termination from acute uremia, complete the story. He describes two cases, both in young women, 23 years of age, death occurring from uremic eclampsia in both cases. In discussing their origin, Power asks the following questions: What is their etiology? Are they due to autogenous toxins, to infection, or to an unrecognized lesion of the kidneys? Are the changes in other organs primary or coincident, or may not the kidney lesions themselves be secondary to a morbid condition elsewhere, to an affection of one of the internal secretions or some lack of adjustment in the chemical inter-relations of the body, such as may result from deficiency or excess of known or unknown hormones? Why is the condition so long latent and so sudden in its termination? He suggests an underlying blood-carried toxin as the cause, and thinks that we can easily understand the cause of the sudden termination if we look on the functional capacity of the kidney as being greatly in excess of the ordinary demand. With the progressive destruction of the secreting or excreting structures, this reserve is gradually called on and exhausted, but so long as any excess remains no retention toxemia can occur. Directly that margin is overstepped, the blood becomes rapidly surcharged with the products of metabolism, which, in their turn, act on the kidney protoplasm, increasingly depressing its eliminative power and thus by action and reaction leading to a rapidly accelerating abolition of all activity.

Western Medical Review, Omaha, Neb.

January

86 First Aid in Fractures. A. B. Anderson, Pawnee City, Neb.
87 Fractures: Symptoms and Diagnosis. S. C. Brede, David City, Neb.
88 The X-Ray in the Diagnosis and Treatment of Fractures. J. P. Lord, Omaha.

Journal of the Medical Society of New Jersey, Orange

January

89 Review of Ninety-six Cases of Endothelioma of the Pleura. H. S. Patterson, New York.
90 Results of Injuries to the Skull. A. J. Walscheid, Union Hill.
91 Affections of the Ear Due to Adenoids. N. L. Wilson, Elizabeth.
92 Acute, Perforating, Gastric and Duodenal Ulcers. (Concluded.) E. Eliot, New York.

St. Paul Medical Journal

January

93 Importance of Caring for and How the State of Minnesota Cares for Its Indigent Children Suffering from Tuberculosis of Bones and Joints. A. J. Gillette, St. Paul.
94 Milk and Meat Inspection. A. O. Bjelland, Mankato, Minn.
95 Gastrointestinal Influenza. M. M. Ghent, St. Paul.
96 Acute Maniacal Excitement in a Patient Eighty-two Years of Age; with a study of the Possible Relation of Blood Pressure to the Condition. C. E. Riggs.
97 Expense of Illness of the Consumptives Who Died in Minnesota in 1907, and How It Was Distributed. C. Easton St. Paul.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

Lancet, London

February 6

1 Forms of Jaundice Capable of Relief or Cure by Surgical Treatment. A. W. M. Robson.
2 *Early Cardiac Inadequacy. L. Williams.
3 Neurologic Fragments. J. H. Jackson.
4 Case of Blood Crisis Occurring in Lardaceous Disease. T. S. Kerr and E. I. Spriggs.
5 Treatment of Empyemata. G. E. Waugh.
6 Single and Successive Extrasystoles. T. Lewis.
7 Two Cases of Hypertrophic Pulmonary Osteoarthropathy. H. E. Symes-Thompson.
8 Excision of One Kidney with Quantitative Analysis of Urine. A. P. Dodds-Parker and E. P. Poulton.

9 Shellfish Typhoid Fever. H. C. Pattin.
10 Comparative Measurements of the Lives of Leucocytes When the Cells Are Resting in the Plasmata of Different Persons. H. C. Ross.

2. **Early Cardiac Inadequacy.**—Williams states that, strictly speaking, the heart may be described as inadequate whenever any of Gaskell's five essential functions become impaired; these are rhythmicity, excitability, conductivity, contractility, and tonicity. At present tonicity is of such clinical importance that when cardiac inadequacy is mentioned impaired tonicity is meant. The first result of this condition is dilatation, so that it is by the signs and symptoms of dilatation that we have to recognize that the heart is no longer equal to its task. Williams thinks that, although palpitation seldom indicates cardiac disease, it invariably denotes cardiac distress. He discusses the causes of palpitation, both mechanical from digestive disturbances and from emotion. A form of cardiovascular disturbance which is often difficult to appraise at its true value is tachycardia, which may be due to nervous influences or to position. Heart hurry in the upright posture, subsiding in the recumbent, is a common symptom in adolescents soon after puberty, in convalescence from acute or debilitating disease, and in neurasthenia. The manometer shows that this condition is invariably associated with subnormal blood pressure, and albumin will almost always be found in the urine. Tachycardia which occurs when the patient is laid on his back is of a different significance. It is the reverse of the normal response and the exact meaning of the phenomenon is not clear. Williams believes that it is due to hyposystole. A symptom of cardiac inadequacy which frequently escapes the attention it deserves is edema of slight degree. Toward the end of the day or after a long walk there will be slight, though definite, pitting over the tibia just above the ankles, which disappears after a night's rest. During the period of repose, however, the urine which had been normal in quantity or scanty during the day shows a decided increase, showing that the tone of the heart, though inadequate to the exigencies of the erect posture, is, nevertheless, capable of fully maintaining the circulatory needs of the recumbent posture. The edematous accumulation of the day is thus fully excreted at night. Williams refers to Widal's work in connection with the production of edema by undue consumption of salts. This edema, which is at first visceral and deep seated, soon becomes general unless the ingestion of chlorids is restricted. Recently Etienne, of Nancy, has shown that even in very old people cardiac equilibrium which, on an ordinary diet, is on the verge of breakdown can be completely re-established by carefully regulating the amount of ingested chlorids.

In the examination of the heart, the question of the size is of first importance. In a patient in whom the blood pressure has been unduly high for several months, a left ventricle normal in size is of bad prognostic omen. Gross valvular lesions with agitating thrills and clamorous murmurs are compatible with complete adequacy of function and do not of themselves constitute any indication either for heroic treatment or for alarmist prognosis. Valvular lesions indicate a certain degree of cardiac crippling, and it must be remembered that, as the French say, "a lesion of the orifice is not a disease of the heart." Williams states that even in the absence of gross murmurs and arrhythmia the attentive ear will frequently detect sounds which tell of dangers ahead. The first of these is accentuation of the second sound. Another is the reduplicated second sound at the apex, which is now generally admitted to indicate an early stage of mitral stenosis. So far as treatment is concerned Williams states that the greatest and most urgent indication is to rid the system of the vasoconstrictor toxins which are accumulating in the blood, and this is to be effected by hygienic and dietetic rather than medicinal treatment. When the fault lies primarily in the myocardium, rest in bed, combined with cardiac tonics, such as digitalis, and diuretics are all important. More important still, in the treatment of cardiac inadequacy, is the prescription of that which all too frequently proves to be but very partially attainable, namely, the philosophic calm which is begotten of perfect tranquillity of spirit.

British Medical Journal, London

February 6

11 *Radium in Surgery. Sir F. Treves.
12 Human Glanders. J. M. Bernstein and E. R. Carling.
13 Anesthesia with Known Percentages of Chloroform. N. H. Alcock.
14 Atrophic Rhinitis Complicated by Mastoid Abscess. F. Stoker.
15 Edema with Resolution by Urinary Crisis. H. D. Rolleston and F. L. Golla.

11. **Radium in Surgery.**—Treves first reviews the uses and limitations of the *x*-ray, the high-frequency current, and the Finsen light, and then enumerates the conditions in which radium has been found useful. He names angiomata, rodent ulcer and epithelioma, and states that the results in the cases treated are apparently permanent. He describes the alpha, beta and gamma rays often given off by radium, and says that in regard to general qualities the alpha rays may exist alone. Alpha and beta rays are absolutely distinct and independent, and can exist the one without the other. The beta and gamma rays are inseparable; they are never found dissociated. The alpha rays are supposed to give off heat and they burn; they are capable of producing a very troublesome ulcer of the skin. The penetrating power of the three varieties of rays is expressed as follows: Taking the penetration of the alpha rays as 1, they are stopped by a sheet of mica. The beta rays have a penetrating power of 100 and will pass through a centimeter of lead. The penetration of the gamma rays on the same basis would be presented by 10,000, and they will pass through one inch of steel. In regard to radium treatment of disease, he stated that the main feature of the application is surface. It is ridiculous, he asserted, to attempt to apply radium as a broken-up bead in a glass tube, without any notion of the amount of the different rays being used or how far the radiation extends. A little radium spread over an even surface is much more powerful and can be much more accurately used than a bead of the radium in a glass tube. Radium must be ordered by a definite prescription. For the individual case a plate of certain diameter is ordered and the proportion of alpha, beta and gamma rays required will be stated in the prescription. It may be necessary to cut off a certain proportion of the alpha rays, and this is done by means of an aluminum plate of definite thickness. The distance is also regulated to suit the individual case. Treves touches briefly on the subject of radioactivity. In the future investigation of radium, it is essential, first, to ascertain the action of the radium rays and of the emanation on bacteria and their products. In the next place, the selective action of the radium on certain tissues must be studied. Little has yet been done, except by Dr. Dominici, to ascertain the effect of introducing radium into the substance of a growth in a tube permeable to its rays, such as a tube of thin aluminum, and so far as he has investigated the matter the results have been encouraging. Then come the questions of the effect of the emanation if inhaled, the effect of injection into the diseased parts of a solution of the emanation, the utility (if any) of radioactive water and other substances rendered potent by radium. Treves warns against raising false hopes for the potentialities of a little known remedy.

Medical Press and Circular, London

February 3

16 Simultaneous Existence of Congenital and Acquired Heart Disease. A. Dietrich.
17 *Radium in Surgery. Sir F. Treves.
18 Infantile Mortality as Seen in a Children's Hospital. D. Forsyth.
19 Gonorrheal Diseases of the Eye. S. Stephenson.

17. See abstract No. 11.

Clinical Journal, London

February 3

20 Treatment of Syphilis by Arylarsonates. J. E. Lane.
21 *Muscular Rheumatism. W. Murrell.
22 Recurrence After Operation for Radical Cure of Inguinal Hernia. W. H. Battle.

21. **Muscular Rheumatism.**—Murrell defines muscular rheumatism as a chronic painful affection of the white fibrous tissue connected with the muscles and implicating the aponeurosis tendons, fibrous septa, fasciæ, and adjacent periosteum. Though the disease is sometimes spoken of as myalgia, the two conditions are not identical. The seizure generally

comes on suddenly and commonly attacks middle-aged people, especially those of gouty tendencies. There is little or no constitutional disturbance and little, if any, elevation of temperature. Conditions which may be mistaken for muscular rheumatism are myalgia, lumbago, indurations or nodule formation of the fibrous tissues, pleurodynia, rheumatic torticollis, and the pain attending the onset of many of the acute febrile diseases. As instances of the last-named conditions he cites the well-known pains of malaria, dengue and beriberi. Some cases of so-called muscular rheumatism, he states, are due to localized neuritis, which may be alcoholic in origin, but are more frequently the result of an old and imperfectly treated syphilis.

Quarterly Journal of Medicine

January

23 *Hysterical Paroxysmal Edema. F. H. Edgeworth.
24 The Venous Pulse in Paroxysmal Tachycardia. J. Cowan, D. McDonald and R. I. Binning.
25 *Effect of the Administration of Calcium Salts of Citric Acid on the Calcium Content and Congulation Time of the Blood. T. Addis.
26* Congenital Family Cholemia. H. P. Hawkins and L. S. Dudgeon.
27 Cardiovascular-Respiratory Murmur and Its Relationship to Other Physical Signs. T. Lewis.
28 Prodromal Rashes of Smallpox. R. S. Thomson and J. Brownlee.
29 Speed Limit of the Human Heart. A. F. Hertz and G. W. Goodhart.
30 Chronic Infectious Endocarditis. W. Osler.
31 Pathology of Uremia. F. Golla.

23. Hysterical Paroxysmal Edema.—Edgeworth reports seven cases and analyzes them. He sums up by saying that the evidence recorded suggests that cases of paroxysmal edema may be divided into two categories, those of Quincke's edema and those of hysterical origin. The former are allied to Henoch's erythema, the latter to hysterical chronic edema. The former are probably due to some blood change, the latter to some disturbance in the central system.

25. This article will be discussed editorially in THE JOURNAL.

26. This article will be discussed editorially in THE JOURNAL.

Journal of Tropical Medicine and Hygiene, London

February 1

32 Methods Employed in Combating Disease Among Coolies in Assam. J. D. Gregorson.
33 Pulmonary Bilharziosis. G. A. Turner.
34 Biliary Cirrhosis of Children, Otherwise Known as Infantile Liver. F. Pearse.
35 Avian Hemoprotozoa of the Genus Leucocytozoon. L. W. Sambon.
36 Hemogregarines of Snakes. L. W. Sambon.

Bulletin de l'Académie de Médecine, Paris

January 19, LXXIII, No. 3, pp. 95-133

37 Marmorek's Serum in Tuberculosis. (De quelques nouveaux documents relatifs au traitement de la tuberculose par le sérum de Marmorek.) C. Monod.

Lyon Chirurgical, Paris

February, I, No. 4, pp. 333-452

38 *Scoliosis from Primary Lumbar Malformation. P. Vignard and G. Monod.
39 *Golter of Parathyroid Origin. L. Bérard and H. Alamartine.
40 *Congenital Hour-glass Stomach. (A propos de l'estomac bi-loculaire congénital.) R. Leriche.
41 *Mobilization *en Masse* of Colon on Left Side. (Mobilisation en masse du colon gauche.) P. Cavaillon and A. Challier.

38. Scoliosis from Primary Lumbar Malformation.—This illustrated article discusses the deformity in the lumbar region that may result from traumatism, an inflammatory or trophic process or from disturbance in development. When the fifth lumbar vertebra is abnormal, there is a lateral slope and torsion with asymmetrical abnormal resistance, as Monod describes in detail. Treatment should be removal of the cause (tuberculosis, nutritional disturbance, chloro-anemia or prolonged convalescence from an infectious disease) and immobilization in a plaster bed in the dorsal decubitus position, with or without longitudinal extension. Later, simple gymnastic exercises and the use of a seat sloping up on one side should be advised. When the compensating curvature is already formed and more or less fixed, immobilization is also the main reliance. After a few weeks the spine becomes supple and relaxed, favoring restoration to normal. The latter does no good, however, unless the primary displacement is corrected and kept corrected.

39. Parathyroid Goiter.—The case described shows the possible existence of islets of parathyroid tissue in the thyroid gland, similar to the aberrant suprarenal cells responsible for intrarenal hypernephroma. The fetal adenoma in this case was removed from a woman of 43 presenting symptoms of mild exophthalmic goiter. The goiter was first observed at puberty, but it began to increase in size with the menopause.

40. Congenital Hour-glass Stomach.—Leriche has examined 100 fetuses and has never found a trace of anything suggesting hour-glass stomach in the slightest degree.

41. Mobilization of the Left Colon.—Cavaillon and Chalier give an illustrated description of a technic worked out on the cadaver for extirpation of the sigmoid flexure and rectum by an abdomino-perineal operation; it includes mobilization of the splenic angle and left colon. The authors refer in a footnote to an article in THE JOURNAL (Feb. 15, 1908, page 573) advocating much the same technic. It permits the intestine to be rendered permeable by re-establishing its continuity without the necessity for an artificial anus.

Presse Médicale, Paris

January 23, XVII, No. 7, pp. 57-64

42 *Comparative Value of Different Technics for Pubiotomy. (Hébotomie.) C. Jeannin.
43 *Mental State of the Survivors of the Sicily Earthquake. (L'état mental des sinistrés de Sicile.) P. Hartenberg.
44 *Action of Salt in Gastric Digestive Disturbances. (Action du chlorure de sodium sur les troubles de la digestion stomacale.) N. Floresco.

42. Pubiotomy.—Jeannin discusses the different methods and declares that the subcutaneous is too dangerous, although it is preferred in Germany. The Calderini flap gives more ample access with less predisposition to hernia than the other technics.

43. Mental Condition of the Survivors of the Sicily Earthquake.—Hartenberg remarks that the conditions of the catastrophe were peculiarly distressing. The earthquake occurred during the night, surprising the people in their sleep, while the pouring rain and the cold added discomfort to the horror; then the extent of the destruction apparent as day dawned, the grief for relatives and for loss of property combined with the pains of the wounds and later with hunger, thirst, the sight of the hundreds of corpses and the constant apprehension of new quakes, combined to constitute a series of the most intense impressions that man is capable of experiencing. After the first agony of suspense, people began to run, straight ahead and without aim, oppressed by panic terror, an atavistic relic of those flights of primeval man before burning forests and inundations; half-clad men and women ran screaming across the country. Many of the wounded did not feel the pain of their wounds during these first hours. One man with several wounds and fractures ran for hours without knowing that he was injured. After the first stage of panic came scenes of savagery in the instinct of self-preservation, but in the midst of these scenes instances of devotion and heroism were observed on all sides, the desperate efforts of many severely wounded resulting in the saving of numerous lives. Besides the praying multitudes, others were found praying to the titans that are supposed to live in the depths of the crater of Mount Etna—a survival of legendary traditions from the days of Homer. Numerous cases of insanity are encountered, but the experts regard them as probably curable. There were many instances of the supreme pathologic reaction, that is, suicide, single and of whole families. The commander of a ship anchored in the harbor saw with his telescope numbers of groups of people, men, women and children, join hands and jump from the docks into the sea.

44. Action of Salt on Disturbances of Gastric Digestion.—Floresco states that salt not only is the source of the hydrochloric acid of the gastric juice, but has a local action on the mucosa of the digestive tract and also a general indirect

action on the gastric secretion from the impregnation of the tissues and juices with the sodium chlorid. He describes experimental research which shows that disturbances in the gastric digestion (vomiting, regurgitation and dyspepsia) are influenced and arrested by eating bread sprinkled with salt. The reaction of the stomach content is alkaline in these conditions, and the salt transforms the reaction by the production of gastric juice and, by its local and general action, it closes the cardia by reflex action. He describes the mechanism of vomiting and of seasickness, etc., and relates experiences which seem to show that it is possible to arrest these disturbances by this simple measure of eating bread sprinkled with salt. It has proved invariably effective in his experience, overcoming the muscular, circulatory and respiratory phenomena which cause the vomiting.

Centralblatt für die Grenzgebiete der Med. und Chir., Jena

December 31, XI, No. 24, pp. 929-980

45 *Action of General and Spinal Anesthesia on Kidneys and Urinary Secretion. (Einwirkung der allgemeinen Narkose und der Spinalanalgesie auf die Nieren und ihr Sekret.) M. Hirsch. (Commenced in No. 20.)

46 *Kidney Affections During Pregnancy. (Erkrankungen der Niere in der Gravidität.) R. Pollak. (Commenced in No. 12.

45. Action of Anesthetics on the Kidneys and Urinary Secretion.—Hirsch analyzes 207 articles that have been published in late years bearing on this subject. It seems evident that the effect of chloroform and ether on the kidneys is merely one manifestation of a general intoxication of the system from the drug. The old theory of a delayed toxic action on the kidneys has been sustained by recent research which has revealed degeneration of the parenchymatous organs throughout, but most prominent in the kidneys. He discusses the mechanical, contact, toxin and blood theories offered in explanation of this action of the anesthetic on the kidneys, his impression being that each contributes its share to the syndrome observed. Even spinal anesthesia is not free from this injurious action on the kidneys; this has proved a great disappointment to those who had hailed the spinal technic as exempt from injury to the kidneys. His general conclusions from all the material reviewed are that chloroform or ether can be used with the ordinary technic if the kidneys are known to be sound, but if the kidneys are pathologic, chloroform is absolutely contraindicated. For these cases the experiences to date show that the least harmful of all technics is general anesthesia with ether plus oxygen, preceded by an injection of morphin. Under all conditions, he continues, the amount of the anesthetic used should be the smallest possible; this is favored by shortening the duration of the anesthesia to the minimum by rapid operating, by doing all the preliminaries before commencing to administer the anesthetic, and by stopping the anesthetist at the earliest possible moment. Another point is the choice of the drop method; much less of the anesthetic is used when administered drop by drop, and the state of tolerance is more rapidly reached. A preceding injection of morphin also reduces the amount of chloroform needed, while it has a tendency to counteract its injurious effects. In operating, everything should be avoided which would favor the degenerative action of the anesthetic. Chief among these is loss of blood, which should be combatted in every possible way. Terrier called attention long ago to the fact that loss of blood during the operation favored postoperative albuminuria, while Strassmann found that withdrawal of blood in his experiments on animals contributed to the intensity of the chloroform intoxication. Careful hemostasis and prevention of chilling during the operation will, therefore, aid in preventing injury from the anesthetic. It is also important to refrain from administering a general anesthetic several times to the same patient within a short interval. If the chloroform intoxication is superposed on a preceding similar intoxication, before the kidneys have had time to recuperate completely, there is liable to be serious trouble. The danger in the second anesthesia is far more imminent than in the first. The interval should be at least a week, and the second anesthesia should never be attempted until the urine is free from albumin and has lost its transient reducing power. It is a great advantage when oxygen can be administered with the chloroform or ether. Mixed with oxygen, the drug is much less injurious for the organs than the anesthetic alone. No benefit is derived from mixing chloroform and ether—the combination, he declares, seems even more injurious than either alone.

46. Affections of the Kidneys During Pregnancy.—Pollak summarizes the principal points in 611 articles on this subject, classifying them under various headings. In case of hematuria, various authors advise expectant treatment, the patients being kept in bed and the diet regulated to protect the kidneys against further injury. During the attacks, styptics should be tried, and Yff has reported good results from salol, 1 gm. (15 grains) three times a day. Treub induced premature delivery in one case, and Chiaventone punctured the amniotic sac to relieve the ureters and vessels from compression. In tuberculosis of the kidney as one manifestation of general tuberculosis, the pregnancy is almost certain to have an aggravating effect, and no treatment is of any avail, but primary renal tuberculosis with pregnancy should be treated by removal of the tuberculous kidney if only one is affected. Israel operated in a case of this kind at the fifth month and the pregnancy proceeded to term. The patient was in good health seven years later. He is convinced that there is no affection of the kidneys which displays such a progressive character under the influence of pregnancy as tuberculosis. It is difficult to determine whether or not both kidneys are affected; sometimes, besides cystoscopy, cryoscopy and catheterization of the sound ureter, it may be necessary to expose both kidneys. If the integrity of the second kidney is dubious, the pregnancy should be interrupted. This will not cure the tuberculosis, but it will mitigate the symptoms and retard the progress of the disease. In all this experience there is no record of neoplasms in the kidneys complicating pregnancy. These growths are observed before puberty or not until after 40. The evidence to date seems to show that the remaining kidney after a nephrectomy becomes hypertrophied and compensates for its absent mate, so that a nephrectomized woman may pass through a normal pregnancy. Reeb has reported eleven such cases of normal pregnancies after nephrectomy for calculi or pyonephrosis; one of the women had three. Of the four women whose kidney was removed on account of tuberculosis, three have borne children since and are in good health. The fourth died in childbed; the remaining kidney had not been sound in this case.

Deutsche medizinische Wochenschrift, Berlin

January 28, XXIV, No. 4, pp. 137-184

47 *Origin of Diabetes. (Entstehung des Diabetes.) F. Hirschfeld.

48 Shape of Leucocytes in Urine in Tuberculosis of Urinary Passages. (Form der Leukocyten im Harn bei Tuberkulose der Harnwege.) B. Goldberg.

49 Acute Postoperative Dilatation of Stomach. Technic of Posterior Gastroenterostomy. (Zur Frage der sogenannten akuten postoperativen Magendilatation.) G. Axhausen.

50 Movable Cecum and Chronic Appendicitis. Wiemann.

51 Points of Support in the Foot. (Die Stützpunkte des Fusses beim Gehen und Stehen.) Momburg.

52 Diagnosis of Suppuration in Nasal Accessory Cavities and Advantages of Suction Treatment. (Nasennebenhöhleneiter ungen.) Martens.

53 Testing of Disinfectants. (Disinfektionsmittelprüfung.) H. Schneider.

54 Protecting Glasses of Optical Glass. (Schutzbrillen aus optischen Glase.) Axmann.

47. Origin of Diabetes.—Hirschfeld has recently reported some cases of diabetes in which the latter developed after some infectious disease. The diabetes was accompanied by gastrointestinal symptoms, but there was no pronounced polyuria, although the glycosuria lasted for several months. Another special feature of the cases was the accompanying enlargement of the liver, which gradually subsided completely. In a still more recent case the onset of the diabetes occurred six weeks after a severe infectious sore throat; there was also enlargement of the liver in this case. In another case, a man of 46 presented symptoms of diabetes such as accompany a transient affection of the pancreas. He had had previously numerous attacks of influenza. After a concussion from jumping from a moving trolley car, the diabetes re-

turned in more severe form and became chronic. These and other experiences have convinced Hirschfeld that infection is an important factor in the origin and aggravation of pancreatitis and diabetes, and that chronic pancreatitis, such as is found so frequently in diabetics, generally has developed on the basis of repeated acute or subacute inflammations. Glycosuria lasting only a few weeks or months corresponds to the acute transient pancreatitis. The same mode of origin, he thinks, should be accepted for both cirrhosis of the liver and the cirrhosis of the pancreas, which is the basis on which diabetes develops, namely, inflammation or atrophy from the injurious influence of some primary inflammatory focus, conveyed by the blood. The inflammation in the pancreas is seldom so acute that the connection between it and the resulting diabetes can be detected. As a rule, the liver and the pancreas become simultaneously affected, but the liver affection generally retrogresses, although traces of the process can be discovered by the pathologists. If the liver is in any way deteriorated, as from the action of alcoholics or malaria, the process in the liver predominates, and, although cirrhosis may develop in the pancreas, yet no diabetes results. He thinks that the portal vein is very rarely the route by which the influences arrive responsible for the process in the liver and pancreas. He cites some cases recently described by Tsuchiya in which cirrhosis in the liver was the direct result of invasion of the liver through the portal vein by helminths, the *Schistosoma japonica*. The pancreas was intact. Hirschfeld accepts this as confirming his view that when the infectious agent arrives by the portal route the liver alone is affected, but when it comes by way of the blood both liver and pancreas suffer. It seems to be amply established by recent research that the pancreas is found nearly always more or less pathologic in every case of cirrhosis of the liver that comes to autopsy.

Medizinische Klinik, Berlin

January 24, V, No. 4, pp. 117-156

55 Modern Treatment of Pleurisy with Effusion. (Pleuritis exsudativa.) F. Lommel.
56 *Pathology of Median and Ulnar Paralysis. (Medianus- und Ulnarislähmung.) M. Bernhardt and M. Zondek.
57 Pneumococcus Pneumonia. B. Buxbaum.
58 *Massage in Correction of Deformed Nose. (Kosmetische Umformung einer knorpligen Nasendifformität durch Massage.) Orlowski.
59 Value of Addition of Suprarenal Preparations to Local Anesthesia. (Wert der Kombination der Lokalanästhetika mit Nebennierenpräparaten.) O. Stoll.

56. **Median and Ulnar Paralysis.**—Bernhardt and Zondek report a case of median and ulnar paralysis after fracture of the lower epiphysis of the radius and ulna. The coaptation was not perfect and considerable dislocation remained, but early functional and electric treatment restored complete function. The galvanic current was passed transversely through the forearm several times a week, while the muscles in the hands were treated with both galvanic and faradic currents until now there is scarcely any difference between the two arms, except for a slight atrophy of the musculature. In another case the ulnar paralysis developed thirty years after a fracture of the right elbow. He has noticed that these tardy injuries develop mostly in persons with cervical ribs. In another case the ulnar paralysis was a bicycle injury, the second case of the kind in his experience.

58. **Massage of the Nose to Correct Deformity.**—Orlowski reports successful application of massage to correct a cartilaginous deformity of the nose. The massage must be gentle, petrolatum being used copiously; results should not be expected before two or three months. The best results were obtained with what he calls protuberant tip—behind the tip the nose looking as if inflated, the nostrils rigid.

Münchener medizinische Wochenschrift

January 26, LVI, No. 4, pp. 161-216

60 *Retroflexion of the Uterus in General Practice. (Die Retroflexio uteri in der allgemeinen Praxis.) M. Henkel.
61 *Treatment of Placenta Prævia. A. Flessler.
62 Differential Diagnosis of the Leukemias. W. H. Schultze.
63 *Treatment of Flat, Superficial Carcinoma. (Behandlung der flachen Hautkarzinome.) E. Rehn.
64 Changes in Size of Heart in Hot and Cold Bath. (Veränderung der Herzgrösse im heissen und kalten Bade.) R. Beck and N. Dohan.
65 Further Experiences with Marmorek's Antituberculosis Serum. Schenker.
66 *Roentgen-ray Cure of Hyperidrosis and Oily Seborrhea. Kromayer.
67 Pyocyanase in Diphtheria. J. Grosz and H. Ban.
68 Treatment of Syphilis with Gray Oil. (Zur Syphilisbehandlung mit grauem Oel.) Geyer.
69 Endemic Occurrence of Pneumococcus Angina. A. Schomerus.
70 Treatment and Prevention of Nontraumatic Neuroses in the Insured. (Nicht-traumatische Rentenneurosen.) E. Beyer.
71 Lens Holder for Examination of Eye. (Einfacher Linsenhalter.) F. Kehr.
72 *Instruction in Obstetrics. (Der klinisch-geburtshilfliche Unterricht.) G. Vogel.

60. **Treatment of Uterine Retroflexion in General Practice.**—Henkel reviews this subject from various standpoints, emphasizing the progress realized of late years and the necessity for individualizing treatment to the special indications; no one procedure is applicable to all cases.

61. **Treatment of Placenta Prævia.**—Fiessler reports the experiences at Sellheim's clinic at Tübingen with 111 cases of placenta prævia in the last ten years. He insists that the only proper way to open the uterus rapidly is to do it under complete control of the eye. The vaginal technic for Cesarean section is being gradually abandoned, he thinks; only six cases were reported during 1907. The extraperitoneal Cesarean section, which Sellheim has introduced, is particularly advantageous for women with placenta prævia. It has been applied in nine such cases in the clinic, and all the women left the clinic in good health in three weeks, and with living children, except in one case, in which the child was dead before the operation, and in one in which the prematurely born child succumbed to infection of the umbilicus. This technic allows the uterus to be rapidly opened, in the absence of labor, with absolute avoidance of the slightest unintentional laceration, and with the possibility of complete control of the hemorrhage at any stage, especially during the dreaded third stage of labor with placenta prævia.

63. **Treatment of Cancer of the Face.**—Rehn is assistant to Lexer at the Königsberg surgical clinic, where he has been able to observe cases of apparent spontaneous retrogression of facial cancer with long intervals of apparent cure. But there are still always nests of cancer cells latent in the depths, and no one should be misled into regarding them as actually cured until the scar has been completely excised. The experiences related indicate that Roentgen-ray treatment, even of basal-celled carcinoma, is uncertain and unreliable, even in the absence of involvement of the glands. It is particularly dangerous from the fact that Roentgen rays build up a wall around the tumor so that it can not spread on the surface, but there is nothing to prevent its burrowing into the depths, a condition which occurs almost constantly. He always insists on incising the scar left from the apparent healing of a superficial cancer of the face spontaneously or under Roentgen treatment, and inevitably finds that, while healed on the surface, it is still lingering in the depths. The knife is still, as in the past, he asserts, the only safe means of treating cancer.

66. **Roentgen-Ray Treatment of Hyperidrosis and Oily Seborrhea.**—Kromayer has been successful in treating hyperidrosis with powerful *x*-ray treatment. He has now an experience of twenty cases which confirm his previous announcements as to its efficacy and the necessity for doses sufficient to induce a vigorous Roentgen dermatitis. He declares that the physical properties of the Roentgen current should be the gauge for dosage, not any subjective method.

72. **Instruction in Obstetrics.**—Vogel protests most decidedly against Krönig's views mentioned recently in these columns, Jan. 16, 1909, page 258. He regards them as a backward step and fraught with grave dangers should they be accepted, as he explains in detail.

Wiener klinische Wochenschrift

January 28, XXII, No. 4, pp. 116-150

73 *Routes of Infection in Tuberculosis. (Infektionswege der Tuberkulose.) J. Bartel.
74 *Immunization Against Tuberculosis. Id.
75 *Pregnancy at Term Complicated with Cancer in Uterus, Ovaries and Appendix as Metastases of a Gastric Cancer. J. Goblet.
76 *Late Syphilitic Lesions in Breast. (Lues-Spätformen der männlichen und weiblichen Brustdrüse.) K. Deutsch.

73. Abstracted in THE JOURNAL, Oct. 10, 1908, page 1252.

74. Abstracted in THE JOURNAL, Oct. 24, 1908, page 1447.

75. **Pregnancy Complicated with Cancer.**—Gobiet's patient was a woman of 37 at term, but delivery was interfered with by carcinoma of the cervix and of the right ovary. Seven days after the missed labor, symptoms of septic poisoning developed; the woman was brought to the hospital, and the uterus removed, unopened, and the right ureter implanted in the bladder. Palpation nine days later, when the dressings were being changed, revealed an extensive carcinoma in the stomach, evidently the primary tumor. No attempt was made to remove it, but great improvement followed Roentgen-ray treatment. He reviews 172 cases on record of metastatic cancerous affections of the ovaries. The primary tumor was in the stomach in 126 cases, in the bowels in 16, in the breast in 12, in the uterus in 8, in the gall bladder in 7, and once each in the liver, pancreas and suprarenals. His own case is remarkable for the metastasis in the cervix. The few cases on record in which this occurred have always been in pregnant women. It seems wise to examine the ovaries in all cases of gastric cancer, removing them on the slightest suspicion. Only one case is on record in which the pregnancy continued to term with metastatic ovarian cancer. His case is an example of the great benefit that may be derived from removal of all visible metastases with palliative treatment of the primary tumor, thus allowing a long survival in comparative comfort.

76. **Syphilitic Affections in the Breast.**—In the three cases related by Deutsch, specific treatment was supplemented by operative measures in one case with excellent results. The patient was a woman of 36. Under specific treatment the gumma subsided to some extent, but the marginal portions required excision. Another patient was a woman of 48 with diffuse syphilitic mastitis with local neuralgic pains. The lesions subsided completely under mercurial treatment. The third patient was a man with syphilitic mastitis which promptly subsided under specific treatment. Deutsch comments on the importance of serodiagnosis, which now allows prompt differentiation in such cases.

Zentralblatt für Chirurgie, Leipsic

January 23, XXXVI, No. 4, pp. 106-136

77 *Modification of Gastrojejunostomy. K. Dahlgren.
78 Double Clamp for Operations on Stomach and Intestine. (Doppelquetschzange für Magen- und Darmoperationen.) F. Karewski.
79 Technic of Suprahyoid Pharyngotomy. A. Schlesinger.

77. **Improved Gastrojejunostomy.**—Dahlgren cuts out an oval piece in the wall of the stomach, instead of making the usual linear incision, in doing gastrojejunostomy. This insures the evacuation of the stomach much more readily while it protects against the growing together of the opening. Rapid evacuation of the stomach seems to have a favorable effect on the general health in such cases. He gives an illustration of the clamp he uses in making the oval opening.

Zentralblatt für Gynäkologie, Leipsic

January 23, XXXIII, No. 4, pp. 121-160

80 *Extraperitoneal Cesarean Section. (Ueber den extraperitonealen Kaiserschnitt.) A. Döderlein.
81 *Results of Operative and Diagnostic Direct Illumination of Abdomen, Rectum and Bladder. (Anwendung der direkten Beleuchtung der Bauchhöhle, des Dickdarmes und der Harnblase bei den Operationen und zu diagnostichen Zwecken.) D. v. Ott.
82 Technic and Criticism of Research on the Placenta. (Placentarforschung). W. Liepmann.
83 *Toxicity of Blood Serum in Eclampsia. (Giftigkeit des Blutserums bei Eklampsie.) R. Graf and K. Landsteiner.

80. **Extraperitoneal Cesarean Section.**—Döderlein proposes to make the section extraperitoneal, but to obtain access to the lower segment of the uterus on one side instead of working down on the median line, as others propose. The bladder is filled with enough water to outline it, and he pushes its right side toward the middle and then works upward the vesicouterine fold, pushing it up with a tampon sufficiently high to expose enough of the uterus to deliver the child with ease. There is no danger of hemorrhage with this technic and the incision need not be very large. In one of the two cases reported in which he has applied this technic, the vesicouterine reflection of the peritoneum tore as the child was being extracted, thus opening into the peritoneum, but the tear was sutured at once and no harm done. In future he intends to mobilize this vesicouterine reflection a little more extensively. He calls the technic "lateral extraperitoneal Cesarean section."

81. **Direct Illumination of the Abdominal Cavity.**—THE JOURNAL, Aug. 23, 1902, page 458, published an illustrated description of Ott's method of illumination by introducing electric lamps inside the abdominal and other cavities. He here reports his experiences with 761 cases of vaginal operations and 361 abdominal since he has introduced this method of direct illumination. It renders the vaginal technic so simple and easy, he says, that he now prefers it to the abdominal route, and the mortality has dropped from 2.14 to 1.48 per cent., while the mortality in 572 abdominal operations was 9.09 per cent. He regards the direct illumination as a great advance in abdominal surgery and claims to have been the first to introduce the principle into gynecology.

83. **Toxicity of the Blood Serum in Eclampsia.**—Graf and Landsteiner relate the results of extensive experimental research which have demonstrated beyond question the enhanced toxicity of the blood serum in eclampsia in comparison to normal serum. At the same time their research does not indicate any special eclamptic poison, but merely that the serum contains an abnormal excess of the toxic substances naturally in the serum. The waste poisons seem to be accumulated in abnormal proportions. The next step is to determine whether or not the serum acquires this extra toxicity in other pathologic processes besides eclampsia.

Gazzetta degli Ospedali e delle Cliniche, Milan

January 15, XXX, No. 6, pp. 57-64

84 Trypanosomiasis and the Injurious Effects of Treatment with Arsenious Acid and Atoxyl. A. Massaglia.
85 Experimental Study of Autohemoagglutinins. G. Rubino.

January 17, No. 7, pp. 65-80

86 Etiology, Diagnosis and Treatment of Uterine Hemorrhage. P. Romeo.

January 19, No. 8, pp. 81-88

87 Three Cases of Otitic Abscesses in the Neck. (Ascessi sottoaponevrotici latero-cervicali otitici.) A. Bianco.

January 26, No. 11, pp. 113-120

88 The Treponema Pallidum in Syphilitic Placentas. C. Mario.

Policlinico, Rome

January 24, XVI, Practical Section, No. 4, pp. 101-132

89 Moro's Percutaneous Tuberculin Reaction. (La reazione cutanea secondo Moro.) G. Germonig.
90 *Abortion from Lactation. (Aborto da allattamento?) L. Andalo.

January, Surgical Section, No. 1, pp. 1-48

91 Experimental Research and Cure of Traumatic Lesions in the Muscles and Regeneration of Muscle Tissue. R. Caminiti.
92 *Rare Variety of Femoral Hernia. (Ernia crurale pettinea di Cloquet.) V. Gaudiani.
93 *Obstruction of Small Intestine by Ball of Vegetable Fibers. (Contributo clinico alla patogenesi delle ostruzioni del digiuno di Fitobezoar nell' uomo.) P. Frascella.

January, Medical Section, No. 1, pp. 1-48

94 *Endemic Focus of Febrile Variety of Infectious Splenic Anemia in Children. U. Gabbi.
95 *Case of Splenomegaly Cured by Splenectomy. A. Zancan.
96 Action of Strophanthin. (Sull' azione della strofantina.) U. Deganello.

90. **Abortion in Nursing Mothers.**—Andalo has witnessed several cases of abortion occurring in women still nursing an infant, and he explains it as the result of the preponderance of the lacteal secretion over the gestation process in the uterus. The women had never aborted before, nor have they since, and there was no trauma to explain the abortion.

92. **Femoral Pectineal Hernia Behind Femoral Vessels.**—Gaudiani compares a case personally observed with fourteen in the literature, including Cloquet's own description of this rare variety of femoral hernia. The patients were females in twelve of the cases and all were of advanced years. Symptoms of strangulation indicate the necessity for immediate operation, as the hernia is generally not differentiated until late. The cases terminated fatally in 8 of the 15 tabulated. In his own case the patient succumbed to pneumonia a week after the operation.

93. **Ileus from Obstruction by Ball of Vegetable Fibers.**—Frascella's patient was a woman of 66, suddenly presenting symptoms of ileus. The vomiting was incessant, but not fecaloid; the meteorism was limited to the median central zone of the abdomen, while the pain was in the umbilical region. A laparotomy revealed a concrement as large as an egg in the small intestine, and the symptoms of ileus subsided after its removal. The concrement proved to be a hard mass of vegetable fibers welded together by mucus, a typical phytobezoar.

94. **Endemic Foci of Febrile Infectious Splenic Anemia.**—Gabbi wrote from Messina to describe several endemic foci of a febrile variety of splenic anemia in children under the age of 4, generally boys, several children in one family being frequently affected. The syndrome includes intense anemia, tumefaction of the spleen and gastrointestinal disturbances, but no glandular involvement, no lesions of the bones or affections of the organs of respiration or circulation. The children affected were not always the weakest in the family, and there was no trace of rachitis or syphilis in the parents, who were mostly fisherfolk. No signs of malaria or of leukemia could be discovered in the blood of the children, even in those who succumbed to the progress of the disease. None of the localities has a reputation for malaria, but all are on the seashore. None of the physicians practicing in the inland knows of any such affection in their practice. In two cases Gabbi discovered the Leishman-Donovan bodies in the fluid obtained by puncture of the spleen, and he is inclined to believe that the affection is a tropical disease imported from northern Africa, quite distinct from the afebrile type of splenic anemia.

95. **Splenectomy for Splenomegaly with Cirrhosis of the Liver.**—In Zancan's case a farmer's wife in the Venice province presented the syndrome known as Banti's disease. There were no signs of malaria, syphilis or leukemia, and no benefit was derived from internal measures. The spleen was then removed; it weighed 1,450 gm. an hour after its removal, measuring 16 by 28 cm. There was nothing in the history to explain the development of the affection, and animals inoculated with scraps of the spleen failed to develop any symptoms or morbid process. The patient is in the best of health, two years after the operation, and has gained over 22 pounds in weight.

Riforma Medica, Naples

January 18, XXV, No. 3, pp. 57-84

97 Tumors at Base of Brain. (I tumori della base dell' encefalo.) G. Rummo.

98 *Cholesterin in Cerebrospinal Fluid of Paralytics and Its Share in Serodiagnosis. (La colesterina nel liquido cefalo-rachidiano dei paralitici, e sua partecipazione alla reazione di Wassermann.) G. Pighini.

98. **Serodiagnosis in General Paralysis.**—Pighini has examined the cerebrospinal fluid in 10 cases of progressive paralysis, 7 of dementia præcox, 5 of epilepsy, and 6 others of various affections. He found cholesterin in 8 of the 10 cases of the first group, the others being long chronic cases. The serodiagnosis was positive in 90 per cent of the cases. Cholesterin was also present in the fluid in 5 out of 7 patients with dementia præcox and in 3 of the 5 epileptics. He is convinced that the cholesterin is the main factor in the complement-fixation test, and that cholesterin is never present in the cerebrospinal fluid or in the serum under normal conditions.

Books Received

All books received are acknowledged in this column and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. A selection will be made for review in the interests of our readers and as space permits.

CLINICAL DIAGNOSIS AND TREATMENT OF DISORDERS OF THE BLADDER, with Technique of Cystoscopy. By Follen Cabot, M.D., Professor of Genito-Urinary Diseases, Post-Graduate Medical School, New York. Cloth. Pp. 224, with illustrations. Price, $2.00. New York: E. B. Treat & Co., 1909.

BACTERIAL FOOD POISONING. By Prof. Dr. A. Dieudonné, Munich. Translated and Edited, with Additions, by Dr. Charles Frederick Bolduan, Bacteriologist, Research Laboratory, Department of Health, City of New York. Cloth. Pp. 128. Price, $1.00. New York: E. B. Treat & Co., 1909.

ATHLETIC GAMES IN THE EDUCATION OF WOMEN. By Gertrude Dudley, Director of Women's Department of Physical Education, University of Chicago, and Frances A. Kellor, Author of "Experimental Sociology." Cloth. Pp. 268. Price, $1.25. New York: Henry Holt & Co., 1909.

THE AMERICAN MEDICAL ASSOCIATION OF VIENNA, 1909. (Course-Book, giving full information in regard to Courses, Lectures, Fees, Pensions, Rooms, etc.) Paper. Pp. 75. Price, 25 cents. Address the Secretary, care of Café Klinik, Vienna, Austria.

PNEUMATOCÈLES SPONTANÉES D'ORIGINE MASTOÏDIENNE. Travail de la Clinique d'Oto-rhino-laryngologie de l'Hôpital Saint-Pothin. Par le Dr. Henri Teste, Médecin Stagiaire au Val-De-Grâce. Paper. Pp. 114. Lyon: A. Rey & Cie, 1907.

SURGICAL DISEASES OF CHILDREN. By Samuel W. Kelley, Professor of Diseases of Children, Cleveland College of Physicians and Surgeons. Cloth. Pp. 768, with illustrations. Price, $5.00. New York: E. B. Treat & Co., 1909.

NINETEENTH ANNUAL REPORT OF THE NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION. Part II.—Report of Food Commissioner. Agricultural College, Fargo, N. D. Public Document No. 31. 1908. Paper. Pp. 192.

THE BODY AT WORK. By Alex. Hill, M.A., M.D., F.R.C.S., Sometime Master of Downing College, Cambridge. Cloth. Pp. 448, with illustrations. Price, $4.50. New York: Longmans, Green & Co.

SELF-HELP FOR NERVOUS WOMEN. By John K. Mitchell, M.D., Fellow of the College of Physicians of Philadelphia. Cloth. Pp. 201. Price, $1.00. Philadelphia: J. B. Lippincott Co.

SLEEPING SICKNESS BUREAU. Bulletin No. 3. January, 1909. Paper. Pp. 128. London: Sleeping Sickness Bureau, Royal Society, Burlington House, W., 1909.

SANITARY SCIENCE AND ALLIED SUBJECTS. Selected Bibliography. Arthur W. Smith, M.A. Paper. Price, 50 cents. Boulder, Colo.: A. A. Greenman.

TWENTIETH REPORT OF THE STATE BOARD OF HEALTH OF NEW HAMPSHIRE. Vol. XX, 1907-1908. Cloth. Pp. 332.

NEW PATENTS

Recent patents of interest to physicians.

910982. Forming metal salts. W. H. Allen, Detroit, Mich.
910784. Desiccating milk. J. H. Campbell, New York and C. H. Campbell, Philadelphia.
910643. Apparatus for magnetic treatment of diseases. R. S. Clymer, Allentown, Pa.
910504. Truss. A. C. Cooke, Rockyhill, Conn.
910662. Making caustic alkalies. W. T. Gibbs, Buckingham, Quebec, Canada.
910821. Vibratory apparatus for therapeutic use. J. C. Johansen, Copenhagen, Denmark.
910930. Medical electrical device for medical and therapeutical purposes. F. A. Ligowsky, Cincinnati, Ohio.
910854. Stethoscope. C. J. Pilling, Philadelphia.
910859 Washing device for cleaning wounds. J. Reusch, Wiesbaden, Germany.
910728. Ambulance. I. H. Russell, Washington, D. C.
910729. Gas-syringe with branched-out discharge pipe. K. Schmidt, Neuruppin, Germany.
910884. Scalp sprayer. W. B. Van Eps, Rochester, N. Y.
911243. Orthopedic apparatus. K. Johannesen, Detroit, Mich.
911324. Combined shoulder and body brace. J. D. Orear, Mexico, Mo.
911523. Antiseptic syringe. C. Piers, Chicago.
911269. Producing certain proteids from buttermilk. L. H. Reuter, Berkeley, Cal.
911331. Disinfecting apparatus. W. H. Rose, Baltimore, Md.
911528. Therapeutical apparatus. A. H. Shoemaker, Seattle, Wash.
911185. Device for treating the human body with heated air. D. Turnauer, Vienna, Austria-Hungary.
911532. Artificial leg. O. A. Watson, Columbus, Miss.
911101. Audiphone-transmitter. C. E. Williams, Natick, Mass.
911803. Treating and producing it. A. D. Barr, Jersey City, N. J.
912231. Apparatus for generating and administering gases for general anesthesia. C. R. Cummins, Philadelphia.
911952. Cooler and aspirator. J. D. Devoss, Indianapolis, Ind.
912106. Multiple fluid sprayer. E. J. Frazier, Buffalo, N. Y.
911875. Apparatus for measuring the humidity in or determining the evaporating power of the air. M. M. Hastings, Washington, D. C.
911724. Syringe. F. S. Honsinger, Syracuse, N. Y.
912130. Artificial leg. D. B. James, Jackson, Tenn.
911727. Vapor bath cabinet. L. C. Jaques, Spokane, Wash.
912016. Massaging device. W. I. Miller, Cleveland, Ohio.
912024. Medical implement. W. M. Parks and B. B. Cross, Gas City, Ind.
912263. Sputum cup. H. J. Potter, Cambridge, Mass.
911627. Surgical instrument. B. S. Stephenson, Brooklyn, N. Y.
912205. Apparatus for applying internal massage. F. L. Talcott, New York, N. Y.
912214. Invalid-bed. L. W. Ward, Buckhannon, W. Va.
912769. Maternity corset. H. S. Anderson, Chicago.
912532. Combined respirator and inhaler. H. Brat, Charlottenburg, Germany.
912280. Sanitary appliance. H. G. Brott, San Jose, Cal.
912452. Combined sterilizer and irrigator. M. H. Evans, Joplin, Mo.
912691. Spraying nozzle. F. and F. Koenigkramer, Cincinnati, O.
912966. Spraying apparatus. E. H. Lamlell and H. L. Hurst, Canton, Ohio.
12920. Reissue, putting up bandages. J. E. Lee, Conshohocken, Pa.
912588. Osteopathic table. W. M. Marseilles, Clinton, Mo.
912869. Treating phenacetin and product. A. G. Meyer, San Francisco, Cal.
912708. Massage device. T. H. Midgley, Kalamazoo, Mich.
912622. Manufacture of hydrated sodium carbonate. W. E. Ridenour, Philadelphia.
912894. Spraying appliance. J. C. Ryan, Gasport, N. Y.
912742. Inhaler. P. W. Shute, White Pigeon, Mich.

The Choice of an Automobile

And How to Care For It

A DISCUSSION OF THE FEATURES DESIRABLE IN THE PHYSICIAN'S MOTOR CAR

Most of the following articles are by physicians, but some are by experts connected with automobile companies. THE JOURNAL expresses its thanks for these contributions on one of the most practical subjects that affects the physician

EVERY CAR REQUIRES INTELLIGENT CARE

Largely through the influence of the last Automobile Number of THE JOURNAL,[1] I purchased, last October, a slightly used, fourteen horse-power runabout (109), and have used it daily since, except in wet weather, when I use my horse and buggy. I run the car and care for it myself.

I have been pleasantly disappointed in having very few tire troubles. This I attribute mostly to keeping the tires pumped up tight and driving carefully.

By caring for the car myself I have made its up-keep expense much less than that of my horse and buggy, but I warn any physician that, if he has not a mechanical turn, he had best leave the car alone or employ a chauffeur. No matter what the manufacturers may say, all cars require intelligent care and attention. The auto is a great time-saver in the city and makes country trips a pleasure.

M. P. HUGHES, M.D., Gadsden, Ala.

Fig. 1.—Dr. B. S. Herring, Wilson, N. C., amid pleasant surroundings. (Auto 161.* Article on page 825.)

A RUN OF FEVER AND ITS COMPLICATIONS

About two years ago I contracted the automobile fever through contact with my neighbors who had purchased cars. This disease was prevalent in this state at that time and during the following year. By the end of last year in this vicinity it had assumed an epidemic form, as practically all my neighbors and townspeople were afflicted. In some cases it was a mild type and in others a very aggravated form.

The manner in which it was contracted and the mode of onset was the same in most cases that came under my observation, viz., a dizzy whirl through the country with an automobile agent, whose tongue worked as smoothly and glibly as that of a detail man of a proprietary medicine house. This, together with the ever-changing panoramic scenes, the purr of the motor and odor of gasoline, produced complete relaxation, making the victim a splendid subject for the invasion of the automobile microbe.

Though my case was an aggravated one, I waited for THE JOURNAL'S second Automobile Number[1] and then decided to purchase a car. I have been driving it for eight months and would not think of going back to the horse-drawn vehicle. True, one may get a little grease on one's hands and clothes occasionally, but the saving of time on the road, the ability to do more work, and more time for recreation more than compensate for these trifling annoyances. The time is fast aproaching when a doctor's patients will demand of him a rapid method of transit.

I have not found it more expensive than keeping a team. The first cost, however, is considerable and the necessarily rapid deterioration of the machine, being subjected to so many strains in operating over all kinds of roads, is to be taken into consideration. I am persuaded that with the more general use of the automobile, the manufacturers can manufacture them at a greatly reduced figure.

Fig. 2.—The whole Smith family posed for this—so remarks Dr. E. O. Smith, Marquette, Kan. (Auto 137.*)

This new demand in equipment for the physician should be met by a higher medical fee, that he may keep abreast of the times and lay by something, which he can not do with the present inadequate fee charged.

I am not prepared to name the best type of motor car for the physician. Suffice it to say that during the past eight months I have been driving a gasoline motor (137*) and have not been delayed ten minutes on the road from any cause. The engine has always gone when cranked, the tires have never punctured or blown out, and the mileage traveled has amounted to several thousand. This car is equipped with a two-cylinder eighteen horse-power motor, friction transmission and pneumatic tire (138). It is strong and durable, simple in construction and easy to operate.

E. O. SMITH, M.D., Marquette, Kans.

1. THE JOURNAL A. M. A., March 7, 1908.

* For key to automobile names, see editorial explanation.

A SYMPOSIUM ON TRANSMISSION

SHAFT AND CHAIN DRIVE

Two devices may be used for the same purpose, but each under a different set of circumstances, and in their proper place they may perform their offices equally well, so a man without prejudice finds some difficulty in discussing their relative merits. To indicate the best one to use in given conditions is one thing, but to give a verdict of absolute superiority is another, and sometimes practically impossible. So I shall perforce confine my remarks to generalities.

From the earliest attempts to produce a self-propelling vehicle, capable of traveling over ordinary roads, invention has concerned itself with the means for utilizing the sources of power which were widely distributed, easy of access and cheap, it being obvious that no machine which depended on unusual fuels and peculiar forms of energy obtainable only in favorable localities could obtain universal vogue.

At first the steam engine presented the only solution of the problem. Under its boiler most any kind of fuel could be burned, but such a cumbersome piece of machinery left but little room for passengers and presented no opportunity to develop a pleasing contour.

The use of liquid fuel helped matters a little and the perfection of higher speed engines, which lessened the weight for a stated power, enlarged the possibilities still further; but it was the gasoline engine which, both figuratively and literally, gave an impetus to the automobile that has carried it to the perfection of the present day.

The question of power and its application being of paramount importance, it is but natural that the inventor should devote all his mental energy to the perfection of the engine and the means for altering the ratio of its movement to that of the final driver, which means has come to be called the "transmission."

When one has labored hard on what he considers the crux of a compound problem, he is apt to seize on the most obvious means for solving the less vital elements, and in the case of the automobile, when the engine and transmission were designed to fill the peculiar requirements of a universal vehicle, the inventor having choice of several well-known and commonly used methods of transmitting power between rotating shafts, became a prey to brain-fag and considered his problem solved.

A dreamer, who can live on food as unsubstantial as his dreams, may let his fancy take wings and fly, but a manufacturer must time his ambitions to the demands of his public or take to "banting" of necessity, and the dear, unambitious public wanted only a substitute for the horse, not a rival to the locomotive. The earlier machines, therefore, were built along the lines of accepted design in carriage building and a small engine of three or four horse-power, and a single cylinder, of course, was all that was required to meet all the demands of the time.

Considerations of economy of space and the best disposition of the load naturally pointed to a place about midway of the two axles and under the floor, and because vibration was a necessary evil in a single cylinder, it should be laid horizontally, with its piston movement parallel to the movement of the carriage. Thus having the driving shaft parallel with the rear axle, what more natural than to use the simplest possible means for connecting them, that is, a chain? There were, however, some of the earlier machines that used a belt for this purpose and one which went so far as to use several belts on pulleys of various sizes to take the place of a geared transmission. But mud and water are not good for belts; and a machine, however well designed in other particulars, would be useless with such a frail transmission, and so the chain became the standard "final drive."

A decided advantage possessed by the chain is that it does not add to the burden of the bearings. It is loose and free and does not add one iota of friction to the bearings and all the effort that it transmits becomes turning effort at the rear axle. The friction of the rollers, as they enter the interdental spaces in the sprocket, is the only loss and this is a negligible quantity. With properly designed stay rod or radius rod attachments, the rear axle may be anchored to the driving shaft so that while each is free to move through a limited arc, the distance between the two centers can not be altered; thus any variation of load or any movement due to a rough road will not vary the slack of the chain.

But such attachments present some mechanical difficulties and it is common to see cars wherein the radius rod attachments are of lesser length than the distance between the driving shaft and rear axle and any vertical movement would of necessity alter the slack of the chain. But however well the radius rods may be attached, either the body or the rear axle must move on an arc and not in a true vertical line. Hence a full elliptic spring is almost a necessity in cars driven this way.

When the chain is new and the sprocket is new, there is no lost motion except in the slack of the chain, and so far as transmitting power is concerned, it is an ideal drive. But the wear on chains is cumulative, that is to say, the wear on all the links must be added together and a slight wear will increase the slack considerably. On the other hand, the occasion for wear at each chain joint is not very good. Nevertheless it is difficult to make a chain so uniform in structure that the wear will be uniform throughout its length in every link. This means that the centers of revolution are constantly changing their relative distance from each other as different portions of the chain pass in and out of the sprocket. Too much slack has to be left on a worn chain in order to take care of the less worn places.

It is not an easy matter thoroughly to protect a chain from dust and dirt. Any device which provides a good covering, and at the same time permits the necessary adjustment for wear, becomes somewhat cumbersome and heavy and is rather an unsightly addition to the car.

While the chain does not need much oil, it is not the easiest thing in the world to put that little oil where it is most needed.

In the old bicycle days it was not such a matter to take off the chain, soak it a little while in hot vaselin, let it cool, wipe off the vaselin from the surface; then the chain was ready for a two or three months' run. The automobile chain, however, is heavy and unwieldy, and one hesitates before taking it off; yet with the new form of chains with well-hardened rollers, a single oiling will last a long time. But as an offset to these disadvantages, the chain is easily repaired. It is no difficult matter to carry two or three spare links in the tool-kit; a repair of a chain on the road, while not a kid-glove affair, may be made in a few minutes, and that is very important. To the man on a country road the easy repair of the vulnerable parts not only saves embarrassment but if he is a physician, may save a life.

As the desires of the public grew with their increased knowledge of what was possible, the cars increased in weight and capacity and the proportion of the weight of the engine to that of the whole car became less and less, so that its disposition in the frame became of less moment than in the earlier types. It is manifest that an engine placed in easy access under a hood in the front of the car offers not only greater accessibility but greater cleanliness; therefore, as the necessity for multiplying cylinders became apparent, the advantages of the upright form appealed very strongly to the automobile builder, and in this form of drive the shaft being at right angles to the rear axle, some form of bevelled gear became an absolute necessity.

Now it is admitted, at the start, that however well designed a bevelled gear may be, it is a physical impossibility to make one entirely without end-thrust or friction, and these two sources of loss, while not great, must be reckoned with and advantages must be found to more than offset them. The willingness of the automobile-buying public to pay a reason-

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able price for a perfectly designed and constructed piece of machinery has led to the construction of machines for finishing these gears, which produce a gear without lost motion and therefore without noise, with a minimum of friction and the smallest losses due to end-thrust.

Nevertheless this end-thrust exists. Suitable ball bearings are provided to reduce the friction of the end thrust but this does not entirely prevent loss of power, for it is not in the creation of friction that power is lost but in the indirect application.

But such a device may be perfectly housed, absolutely free from dirt, is comparatively small and compact, and requires no adjustment by the user after once being set, except at long intervals; and with any reasonable margin of safety there is almost no possibility of a disabling break. However worn, the gear will still drive the car.

The lost motion due to wear is not cumulative; that is to say, each tooth is an independent driver and is not affected by the wear on any other tooth, but it has to be driven through universal joints and these are sources of weakness, and unless paired, will give to the rear axle an unequal motion.

In traveling over a rough road the application of power to the final drive is alternately from the engine and from the rear axle; that is to say, the road tends constantly to accelerate and to retard the motion of the car and any looseness in the final driver results in irregularity of motion and the sudden application of strains to this member.

In the shaft drive there is almost no lost motion. As a consequence this source of loss and danger is almost entirely eliminated, whereas, in the chain drive, if the chain is much worn or irregularly worn, it is augmented. The chain is used, however, as a rule, on lighter cars, where the evil results of this imperfection would be greatly reduced.

The weight of the car, the disposition of the engine, the kind of roads over which it is to travel generally, make all the difference in the world.

A heavy car with the engine well forward, intended as a touring vehicle to be used on all kinds of roads and in all weathers, should, in the very nature of things, be driven with a shaft, but a light car with no great surplus of power, with the engine near its center, while it would drive with a shaft, would encounter greater losses and be subject to more inconveniences than though it were driven with a chain. For a light car with the heavy engine placed over the front wheels so that the shaft would be at a right angle to the rear axle, would meet the obstructions in the road to great disadvantage, absorb much power and make heavier front springs necessary; and if it were a two-cylinder opposed engine, as generally used on these lighter cars, it would shake as though with ague. And if the engine were set to the best advantage in other ways, a double system of bevel gears would be required for a shaft drive.

It would seem to me that the debatable point for the physician is the relative merits of a light or heavy car for his particular service, but that does not come within the scope of this question.

FREDERICK PURDY, Kenosha, Wis.

SHAFT DRIVE VS. CHAIN DRIVE AS VIEWED BY A PHYSICIAN OF MANY YEARS' EXPERIENCE

I have used several cars having chain drive (105) and several with shaft drive (106). The latter is to be preferred from many standpoints. In the first place, it is clean and requires little or no attention, which is an important factor in the use of a car by a professional man. It is less noisy, is much more endurable, and as a consequence is less expensive to maintain. There is no kind of weather during which the gearing is not protected.

With the proper construction of the rear axle, there is so little wear on a good shaft drive that, after years of use, the gearing shows little or no wear and is not noisy, if properly oiled.

In muddy weather the mud and water, coming in contact with the chain, prevent its proper oiling and cause it to wear out rapidly; besides, it is a common occurrence to have a stone thrown by the wheels into the chain at its junction with the sprocket, completely locking the wheel and often breaking the chain. Dust is equally bad.

The sprocket wheels wear out, and are expensive to purchase and more so to install. A perfect cover for chain and sprockets that will not jar loose and become noisy and dangerous to the car, so far as I am aware, has not yet been discovered.

The only argument that I ever heard against a good shaft drive is that it requires more power to propel the car. While this may be true, the additional power required is so inconsiderable that this disadvantage is greatly overbalanced by the advantages. As further proof of the superiority of shaft drive over gear drive, nearly all the best factories are adopting that method of propelling their cars.

C. P. THOMAS, M.D., Spokane, Wash.

A COMPARISON OF CHAIN AND SHAFT DRIVE

There is so much unintelligent discussion of the relative merits of chain and shaft drive, particularly in the case of salesmen praising their respective goods, that the following may not be amiss, as it can be taken, I believe, as a reasonable statement of the points to be considered:

The form of drive in every automobile, like practically every other part of the car, is necessarily a compromise. Every construction has some bad features, but is considered by the designer to possess, in relation to the other parts, enough good to more than outweigh the bad.

The transmission of power through chains is more efficient, through having less friction loss, than transmission through bevel gears. It is impossible to state how much more efficient, as that depends entirely on circumstances. On the other hand, chains have three disadvantages—noise, stretching and dirt. By the use of ample sprocket surface, accurately cut, noise may be reduced to a minimum. By the use of ample chain capacity and by providing expeditious means for taking up stretch, the stretching feature may be so reduced as to be of no importance. Side chains are entirely free from the objection of dirt, as they extend from one open sprocket to another open sprocket so that dirt does not do any particular damage, and in the second place, they are well away from the range of the dirt which is thrown by the wheels.

With the old-fashioned single chain under the body, the question of dirt is more serious because the chain is in direct range of the dirt and mud thrown by the wheels as they strike the ground, in addition to which the rear end of the chain runs into the housing which contains the differential mechanism, whereas the front sprocket is intimately connected with transmission and motor, so that the chain acts as a conveyer to collect the flying mud and distribute it over the three most important pieces of mechanism in the car.

The bevel drive is free from the three objections named for chains. It has, however, inherent objections of its own. It is somewhat less efficient, very much more expensive to build, involves of necessity a live rear axle and if anything goes wrong about it, the repairing of such troubles must be made in a well-equipped shop at a very considerable expense to the owner; whereas, with the chain drive, if trouble happens, repairs can generally be made by the roadside by an amateur.

The single chain drive also involves a live rear axle, being superior to the shaft drive only in efficiency and inferior to it in every other respect.

The double side chain drive eliminates the necessity of a live rear axle, the differential being placed on the jack shaft, which is only a driving member, whereas the live rear axle is not only a driving member containing the necessary machinery for driving, but is in addition thereto a load-carrying member, having only the tires between it and the ground, whereas the jack shaft has both springs and tires to save it from road shocks and, in addition, does not have any load to support.

The double side chain drive also has its objection, which is the necessity of a bevel gear in addition to the chain. This objection is, however, minimized because this construction

allows the two bevel gears to be nearly of the same size, which makes them more efficient than when there is a considerable difference, as is necessary for a large gear reduction between engine and wheels. With this combination a little of the reduction is taken by the bevels, but a further reduction *ad libitum* can be made through the sprockets. Thus, in the case of a high-speed motor driving a low-speed car, a shaft drive becomes a practical impossibility, the choice being between single chain or double side chains, the latter of course being highly preferable.

From the above it can readily be seen that so many different elements must be considered that when the callow salesman makes the offhand general statement that chains are

Fig. 3.—Dr. H. H. Judd, Wallace, Idaho. A holiday in August through the cottonwood underbrush. Not as smooth as it looks. (Auto 122.)

better than shaft or that shaft is better than chains, he knows considerably less about it than any one who has carefully read the above remarks.

FRANK BRISCOE, Detroit.

TRANSMISSION GEAR

Of the three types of transmission gears used in automobiles—the friction, planetary and sliding—an experienced motorist will usually favor the sliding type.

A number of manufacturers have experimented with the friction type, but sooner or later most of them abandon it. The friction gear gives almost any rate of speed desired by moving the friction wheel to different positions on the revolving plate keyed to the engine shaft. With much use the friction wheel is liable to slip on the plate, the bearing surface being so small; this is one of the principal objections to this type of transmission.

The planetary type gives two speeds forward and one backward. Revolving discs filled with gear wheels, the central one fastened to the engine shaft, are surrounded by clutch bands, made of spring steel and lined with wood fiber or leather. These revolving discs are usually encased and the case filled with lubricating oil. Most cases allow the oil to leak out, then the gear wheels run dry, wear and get noisy. In addition to this, the band linings wear out when the clutch bands slip. This causes loss of power and speed and leads to endless annoyances, loss of time and causes lots of expense. This type of gear is used in many makes of cars and is greatly superior to the friction type. Most light cars use this type of transmission.

The sliding transmission gives three speeds forward and one backward. This extra speed forward (intermediate) is of much value. In this type of car there is a friction clutch locking with the fly-wheel, of large friction surface, a powerful bite, which when properly adjusted seldom gives trouble. There is great durability to this style of clutch.

The intermediate gear shines in many places where the high can not be utilized On hilly and muddy roads it is of great value in making speed. The friction and planetary types of transmission are easier for the novice to manipulate, but when he becomes an expert, the sliding type will give him more satisfaction and be just as easy to handle.

The sliding transmission, for the smoothness and quietness of its running qualities, its strength and durability, as well as its ease of manipulation when once learned, to my notion, surpasses all other types and at the present time leads.

C. E. ROGERS, M.D., Montevideo, Minn. (160).

FRICTION DRIVE—ITS PROVED EFFICIENCY

The automobile public has all but ceased arguing the question of friction transmission efficiency. In the minds of thousands of car-owners, drivers and experts, it is a demonstrated and accepted fact.

There are, however, certain enthusiasts who do not grant to friction transmission the credit due it. If this brief statement may lead some of these unbelievers to a more earnest study of the whole transmission question, and friction transmission in particular, it will have served a good purpose.

Many authorities agree that the use of the aluminum disc as the driving member, and board-fiber or friction-paper wheel as the driven member, is the highest development of the friction transmission as used in the construction of automobiles, and gives to the car certain distinct advantages which no type of gear transmission, no matter how expensive in construction, can give.

From the standpoint of economy there is hardly a comparison between friction and gear transmission. The simple friction transmission costs much less to build and its low cost enables a manufacturer to sell a car with more quality in other parts than a manufacturer of gear-driven machines can possibly afford to sell at a similar price. The simplicity, too, of the friction drive eliminates practically all the expense of up-keep. The only part to wear out on a transmission is the board-fiber rim of the driven wheel, and it can be replaced by any one in an hour's time, at an expense of not

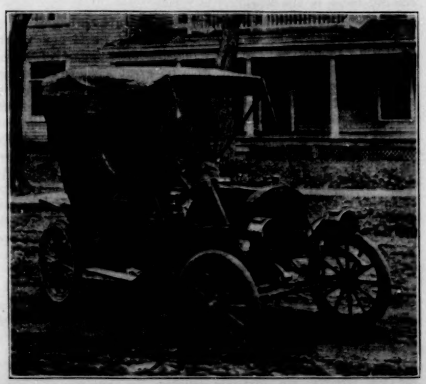


Fig. 4.—Dr. J. A. Palmer, Erie, Kan., with his wife, daughter and repair man. (Auto 162. Article on page 816.)

more than $3. For a car in ordinary service, this board-fiber rim seldom needs to be replaced more than once a year.

Aluminum solved the problem of the driving wheel. The aluminum friction disc, against which the driven wheel revolves, will not wear smooth. Thus perfect friction is assured under all conditions. Every user of gear transmission knows how these figures on the up-keep of friction transmission compare with the cost of gear up-keep.

The service—the constant, dependable efficiency—is more important. Repeated and indisputable road tests definitely prove that the friction transmission actually transmits under all conditions, a higher percentage of the power generated than any type of gear transmission.

The friction drive, because of its simplicity, does away with a large share of the unexpected breakdowns which car-owners experience. It gives a flexibility of control attained with no other transmission. It permits the widest range of speed—from one mile per hour up to the highest speed. It eliminates shock and jar in starting and stopping. It serves most efficiently as clutch and brake. Its every operation is silent.

The following description of a friction transmission that is being placed on the market at the present time will, no doubt, prove of interest to the reader. This transmission system embraces but two elements—a friction disc and a friction wheel, the former mounted on the rear end of a continuation of the crank shaft and the latter on a cross, or jack shaft lying in rear of the disc face, from which the chain transmits to the rear axle.

By lever, the friction wheel can be slid along the jack shaft so that it comes in contact with the face of the friction disc at its center, or at any point from this through the periphery of the right side for forward speeds, and on the opposite side of the disc for reverse speeds. Once the friction wheel is positioned for the desired speeds, the friction disc has to be carried rearward in order to press firmly against the board fiber, tire or rim of the friction wheel. This is accomplished by sliding the entire continuation shaft with the disc rearward, which is made possible by keying a 3-arm spider on the forward end of the continuation shaft and inserting three studs in the rear face of the fly-wheel so that ball-and-socket joints in the spider arm may slip back and forward on these studs.

In describing the above transmission the *Scientific American* editorially says: "The simplicity of this device is as great as its antiquity. Its cost of maintenance is extremely low, while its reliability is very great." The *Scientific American* adds that the device has been applied to trucks of the heaviest type with equal success.

Fig. 5.—Auto (163) of Dr. W. P. Armstrong, Springfield, Ill., showing protection from storm and wind.

Even the most confirmed doubter will agree that this application of friction transmission is the supreme test for real efficiency. Can there be any question that its constant reliability, its utmost ease of control, its record economy of maintenance, its sure going, even in muddy, slippery streets, and its hill-climbing—all the while carrying loads of from two to three tons, is absolute proof of the efficiency of the friction drive?

The use of the friction drive on heavy trucks is not of direct personal interest to all owners of pleasure cars, except as it indicates the assured and even greater reliability of friction transmission in pleasure cars. In these lighter cars, subjected to the usual service, either in town or country or on long, hard drives either in level country or among hills, the reliability of the above type of friction drive is absolute.

G. B. LOUDERBACK, Anderson, Ind.

TWO TERSE TESTIMONIALS

I have always been (and am yet) a great admirer of a good horse. I have owned and driven such good ones as Dr. Russell, 2:20½; Doncella, 2:16, and a number of fine show horses, but last July I purchased an automobile (101) and for me it has the horse completely outclassed. As a matter of fact, you can no more compare a horse with an auto than you can compare the old horse car with a modern trolley car. A machine is a great time saver. I would sooner drive and care

Fig. 6.—This is the comfortable-looking car (133) in which Dr. H. H. Roberts, of Lexington, Ky., toured through several states for a vacation. (Article on page 815.)

for a car than any horse I ever saw. I have driven my machine 5400 miles and found it thoroughly reliable. A doctor should buy some good car, with two or four cylinders, with low wheels and pneumatic tires. Such a car rides easier than a high-wheel one, allows traveling at a more desirable rate of speed, looks better, and is probably no more expensive. Take my word for it, sell your horse and buy a car, such a one as I speak of, and you will thank me for giving you this good advice.

L. B. RUSSELL, M.D., Hoopeston, Ill.

During the last six months of 1908 I used continuously a four-cylinder machine (115) and found it satisfactory in every respect. I can make my visits in one-half the time that I could with a horse and buggy. I have little trouble. The machine is about as expensive as keeping one horse in the livery stable. Our hilly pikes are very poor, making automobiling more difficult and expensive. In a level country with good roads, nothing can compare with a machine. In rough country with poor roads, high wheels would be preferable. The mud roads that I have to contend with could not be negotiated with any type of machine during the winter and spring, and I use horse and buggy until the first of May.

Every physician must find out for himself by experience what sort of car is best suited to his needs and community. In a rolling country speed must be sacrificed for power and endurance; in the level, the opposite. If it can possibly be afforded, a reliable magneto should be purchased. The purchaser should insist on getting the heaviest tires his machine will carry. Most runabouts that have 3 inch tires would be better with 3½ inch tires. The difference in cost will be more than overbalanced by the longer endurance and lessened trouble. A non-puncturable tire would be the greatest boon.

The ordinary acetylene generators on small cars are worthless to physicians. A gas tank will save trouble and worry. One should get the best machine one can afford, with plenty of power; gas and lubricating oil are both cheap.

Look after your machine yourself unless you can afford to employ a competent chauffeur. Learn its anatomy and physiology. If you have no taste for mechanics, and can not afford to employ a mechanic, don't buy a machine.

J. C. LARKIN, M.D., Hillsboro, Ohio.

THE AUTOMOBILE FOR PLEASURE

THE AUTO AS A MEANS OF RECREATION

The automobile has within the last five years become almost as necessary a part of the active physician's equipment as the telephone and that part of the subject will be very thoroughly covered in the Automobile Number.

I should like to say a word, however, on the use of the automobile as a means of recreation for the physician. I have become a great convert to the motor car tour as the best means of taking my vacation and I recommend it enthusiastically to my colleagues.

I have made three trips during the last three years, the first one of about 3,000 miles through New York and New England, the second of about 4,500 miles through central Europe, and the last of about 3,000 miles through the White Mountains, the New England seacoast, the Cape Cod country, Long Island Sound and Long Island.

There is no more fascinating way of spending a vacation of from two to six weeks than in an automobile tour. One sees the country to better advantage than when using any other means of locomotion, unless it be walking, and this, of course, is very slow and the amount of ground which can be covered very small as compared with the country which can be seen in that length of time with a machine.

I have devoted a good deal of study to the type of machine best adapted for a touring car. Here in America one wants a machine with good clearance (from 10 to 11 inches), of considerable power (about forty horse-power), a four-cylinder car (166), with cylinders 5x5½ or 5x6. Probably the more reliable car is a chain-driven car, although such a car is more noisy than a shaft drive and, if one has but a single car to use both for touring and town work, a shaft drive is preferable. The best type of body is that known as the sheltered phaeton type, which can be used for a touring car in the summer and can easily be converted into a limousine for winter use. I have had two of these bodies built (167) and have found them exceedingly satisfactory. Such a body can accommodate very well five people besides the driver and sufficient baggage can easily be carried for a three or four weeks' trip, two light automobile trunks being carried on a trunk rack behind, a goodly-sized dress-suit case under the front seat and the chaffeur's baggage in a circular telescope carried within the two extra tires, and the small hand luggage inside of the tonneau and on top inside the rail.

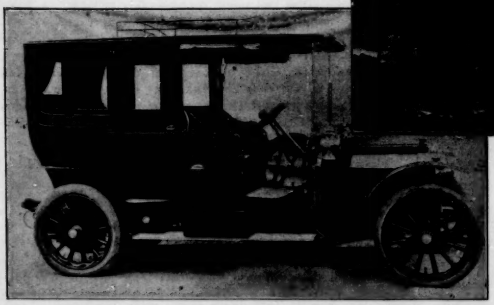


Fig. 7.—Limousine of Dr. Arthur Dean Bevan, Chicago. This is convertible into a summer touring car by the removal of the panel containing the window and the substitution of a low summer door instead of a high winter door.

In touring the speed should not exceed twenty to twenty-two miles an hour. A car at this rate of speed is under perfect control and one can see the country to the best advantage. One can run from 100 to 200 miles and do it with comfort; the average, however, should not exceed 125 miles. Through central Europe my party found it most enjoyable to average about 125 miles, doing this in about six hours' driving, three in the morning and three in the afternoon after lunch. This usually brings us to our resting-place about 4 o'clock in the afternoon and gives us the opportunity of a good walk or exercise and sight-seeing.

The dependability of the modern car is so great that in the three tours which I have made, amounting to over 10,000 miles, we have never had a car in the shop and have never missed our regular connections, even our midday luncheons. The principal difficulty encountered is tire trouble, and with the larger wheels that are now used, this can be reduced to a minimum by careful driving.

As a most enjoyable trip I would recommend for the coming year shipping a car to Liverpool or Cherbourg and going through France, the Black Forest country, Austria, and to Budapest to the International Medical Congress, and back by way of the Austrian Tyrol, Switzerland, northern Italy, central France, especially the château country, and home. I know of three or four physicians who are contemplating visiting the International Congress this summer in this way. I think no more enjoyable six weeks' or two months' trip for one who has a good touring car could be planned. The trip from Cherbourg to Budapest could be made comfortably in about ten days. It would be well to take two weeks or more to the trip, staying a few days in Paris. While in Paris the owner of the car should join the French Automobile club and deposit with this club the amount of duties necessary for all the various countries through which the tour is to be made. The club in return will furnish papers which will be accepted by the custom-house officers at all frontiers. This will save much time and annoyance. When the car returns to Paris the money deposited is collected from the club, minus a nominal fee.

Fig. 8.—Dr. H. B. Engle, Newton, Iowa, and his car (115).

ARTHUR DEAN BEVAN, M.D., Chicago.

THE LIFE OF A MOTOR CAR

At the time I entered the automobile game there was practically no information as to what could be expected to be the average life of a motor car. This to me was an important question, as limited life might make the game too expensive to enter. Seven years ago, I fell in love with motoring. I

wooed and won—with the aid of a check-book—what was then dignified by the imposing title of a "touring car,' and what would be now called a little light "runabout" (115). It was a one-cylinder, nine horse-power machine, and I told of my troubles, tribulations and final triumphs in the first Automobile Number of THE JOURNAL.

During all these seven years I have clung to this one car, which has been running on and on like Tennyson's brook, just as merrily as ever, and, because of my intimate acquaintance with its whims and caprices, it has been running with even less grief and trouble than in the days of old. It is to-day just as reliable, powerful and speedy as when new, and is certainly capable of many more years of satisfactory service.

I have always taken care of the machine myself, and believe that this is the best thing to do, as no one but the driver can know the real condition and needs of the car. Any part

Fig. 9.—Dr. G. Milton Linthicum, Baltimore, and his car (174), in front of the new library building of the Medical and Chirurgical Faculty of Maryland.

showing wear has been replaced and—excluding tire expense, which, like the poor, we always have with us—the principal items have been a new differential at $25, a new chain about every eighteen months, and new gears on the cam shaft. I know the cost of keeping a team and feel sorry for those who have to buy horse-feed at the present prices. It is much cheaper to patronize the oil trust. It is not a question any more of buying a car, but what car to buy. I have found the motor vehicle a great success, but do not want to leave the impression that driving an automobile is one continual round of unalloyed bliss. A machine should not be expected to run from season to season with only gasoline and no attention. It is not an unmixed blessing, but the advantage and pleasure are infinitely greater than the trouble. I would not, if offered it as a gift, care for and drive the best team in the state.

After the excellent service my little machine has given me, I feel somewhat ashamed to confess that last month I purchased another car, becoming, perhaps unfortunately, infected with the mania for more speed, more room and more power, and am getting a thirty horse-power, four-cylinder machine with magneto, shaft drive, selective transmission and convertible into either a two or five passenger car (116). I have not deserted my first love, but shall keep both machines, as I feel that a reserve car will be a valuable asset, and if the new vehicle of my joys and sorrows gives as good service as the old I shall certainly be happy.

HARRY P. ENGLE, M.D., Newton, Iowa.

BUY A GOOD CAR, NOT A CHEAP ONE

Four years ago my first venture was a two-cylinder car of twenty horse-power (131), which gave splendid service for about four months, then began to balk and rattle and go wrong. During the next six months, I spent enough money trying to keep the thing going to more than take up my spare change. At the end of the year I sold the car to the other fellow.

I used next a high-wheeled car (132), for just sixty days. I was glad to sell it for half price, for I felt that it was not only impracticable, but absolutely dangerous in crossing street-car tracks, starting down inclines, etc.

Still I did not give up the idea that the automobile was a "good thing" for the physician. I bought a light-touring car, four-cylinder, forty-five horse-power (133, page 813). I have run this car over 6,000 miles at an expense for repairs of $7.50, this being caused by the breaking of one of the front springs.

Last summer I toured Kentucky, Ohio, Michigan, Canada New York and Pennsylvania, nearly 2,000 miles, without a single adjustment and with only one puncture, on a boulevard in Detroit, a three-inch spike causing the trouble.

For all-around usefulness the light-touring car of high horse-power, with seating capacity for five, is the ideal car for the physician. It is not too large to use in practice, and gives service for pleasure and business. A great mistake is made in buying small cheap cars. They are frail, lack proper power for driving over all kinds of grades and roads and are constantly giving trouble. In the larger car all the parts are well constructed, the material is the best and the tires are larger.

I find that much trouble is caused, in some cars, from tires being too light. I believe that some makes of the high-wheeled car may give satisfaction in the country; but for the difference in price between this and a first-class car, the high-priced car is the cheaper in the long run. A car of this type can be bought for from $2,000 to $2,500. The old adage, "Nothing is good that is cheap," holds good of the

Fig. 10.—Car (177) and chauffeur of Dr. W. B. Caven, Toronto.

automobile. Any car will give service when it is new, but what the physician desires is a car that will give service at all times and is of sufficient power to meet any emergency.

It is important for the physician to run the car himself; to learn the construction thoroughly. I find this not only a pleasure, but a diversion. Three hours' work a week will keep the car in perfect order.

My records show that I have run my car every day, winter and summer, at an expense of $18 per month. The rapid means of getting about is a source of great satisfaction, as well as the time saved. If I had to pay double, the amount would be far better spent than in keeping two horses. Therefore, I believe that unless one is able to buy a good car it is better to defer the matter until one feels justified in making such a purchase.

H. H. ROBERTS, M.D., Lexington, Ky.

SEVENTY-FIVE MILES FROM A REPAIR SHOP

My automobile experience consists of one year with a two-cylinder twenty-two horse-power touring car and more recently with a four-cylinder eighteen horse-power runabout, both of the same make (122). Considering the amount of abuse that a car must receive in this rough country and the primitive condition of the roads, this touring car gave excellent results. As a time-saver an auto has no equal, not to speak of the comfort and pleasure one can have while making distant calls.

As I am about seventy-five miles from a repair-shop it became necessary for me to diagnose and treat all cases of breakdown, but I found this not so difficult after a period of careful observation and a few "experiences."

The tire question was the most annoying single trouble because of the ruts which were baked to almost stony hardness

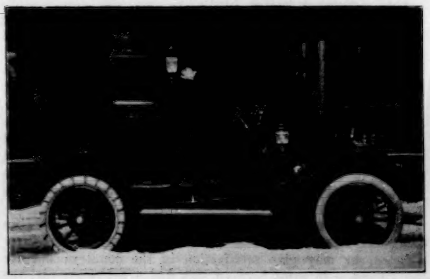


Fig. 11.—The car (175) of Dr. Herbert A. Bruce, Toronto.

by the sun and wore the side of the tire very rapidly. I obtained the best service from a set of tires (123) covered with leather protectors at certain times, the life of a tire being thus prolonged considerably.

My deductions are in favor of a four-cylinder runabout, which gives the maximum power and flexibility with the minimum weight.

High centers in the road are annoying, and therefore a car with maximum clearance is indicated. Most shaft-driven cars are preferable in this respect.

By the aid of good acetylene lamps, night driving becomes a pleasure, and these added to a good top and a weather-proof front allows one to drive in any kind of weather with great comfort. H. H. JUDD, M.D., Wallace, Idaho.

IMPORTANCE OF LUBRICATION

After having used an automobile for over six years, and in my earlier machines putting up with trials, such as balky engines, broken crank shafts, defective ignition, poor tires, etc., I am at present more firm in my belief that an automobile is the best form of conveyance for a physician than when I placed the order for my first machine (143) after listening to all the advantages of the automobile as portrayed by an enthusiastic agent.

I used that car a year, during which time it was in the repair-shop rather often, but I had enough use of it to feel encouraged and more ambitious, so I bought a touring car (144), which proved satisfactory—standing up well under hard daily use and a trip completely around Long Island, which seems little enough now, but in 1905 was considered quite a feat. Then a four-cylinder shaft-driven car (150) was put on the market, and, as it seemed much superior to my one-cylinder chain-driven, I decided to try one. I used this car a year with practically no repairs, and then bought one of the model "R" cars, as it was much better-looking. This machine has given me most splendid service, is economical with gasoline and oil, and requires very little attention. In fact, I used it constantly for one stretch of three months without even having to clean a spark plug. Correct regulation of the oil-supply explains that achievement. Desiring a larger car, I have just purchased a touring car (146), but have used it very little.

In selecting a car a physician needs a four-cylinder, shaft-driven, light touring car, or runabout, of a standard make, equipped with a magneto and an oiling system that oils all or nearly all the places to be oiled, thus doing away with oiling by hand every day. JAMES E. TYTLER, M.D., New York.

THE IMPORTANCE OF INSTRUCTION IN USE OF A CAR

The second automobile number of THE JOURNAL removed any doubts I had on the subject of the automobile and to-day I am the owner of a friction-drive gasoline car (162). Without previous experience or special mechanical ingenuity, I have handled this car about four months, and made my trips and returned with my own power. My manual of instruction came a couple of weeks after the car!

Some one ought to get out a manual that would be of some use to the beginner. For instance, in going down a steep hill the current should be switched off and the power kept on at slow speed; then the brake will scarcely be needed. Not knowing this in my first attempts, I made some records, the brakes not holding very well. Again, in going up a steep hill the car can be held anywhere by keeping on the power. I learned this by experience, fortunately without any accident.

The inexperienced driver without an instructor will do well to bear these points in mind. Half an hour of proper instruction would have put me in complete control of the car.

I have climbed all the hills of any size in the county, have gone through mud-holes and stretches of muddy roads that would test a good team. I don't want to travel any faster until the air ship becomes recognized as a safe method of transit.

Fig. 12.—Car (108) of Dr. F. E. McClure, Detroit, taken in front of the building in which is his office.

The expense of maintenance is not great or out of proportion to the service derived. My 12-year-old son keeps my car in order, takes off tires, repairs tubes, oils the various parts, and all with manifest pleasure. What a different spirit when the old horse requires grooming! The pleasure experienced in handling a good car removes the burden of country practice. A trip of ten or twelve miles is now an actual pleasure; there is no sense of fatigue and one is always ready for another run on return.

My final advice to the prospective purchaser is: Get a car large enough to carry some of your family or friends. Combine business with pleasure—turn the old horse out on pasture and add ten years to your existence.

J. ALLEN PALMER, M.D., Erie, Kans.

A GOOD INVESTMENT

Three years ago I sold my horse and bought a second-hand machine (107) of standard make and drove it 1½ years, but with an amount of trouble and expense entirely out of proportion to its value. During the summer of 1908 I drove another second-hand machine (108) with less trouble than the first because it was of a later and simpler construction. In September, 1908, I bought a new 1909 model of the same make (108), which, with an equipment of top, curtains, lamps, horn and odometer, cost me $603.50. Since that time I have driven it every day and almost every night, through rain, snow and mud, going anywhere I wanted to go at any time I wanted to go. I have made no effort to save it excepting that I have been very careful to see that lubrication was sufficient.

My odometer shows at this writing a trifle over 2,000 miles, with results as follows: Average mileage per gallon of gasoline in the winter, 23 miles; in the warmer weather of the fall, 25 miles; 360 miles per gallon of engine oil. The differential gear box is filled about every 1,000 miles, and the transmission box once a week. My gasoline costs me 10 cents per gallon, engine oil 30 cents per gallon, and transmission oil 6 cents per pound, and that is absolutely all the expense I have had. The machine has not stopped once, nor even hesitated. I have tightened but one bolt and that on the starting handle. It starts as easily on a cold morning as on a warm one. The total weight is about 900 pounds equipped, and to this light weight I attribute the fact that I have not had even one puncture.

The engine is a single cylinder 4-cycle, but with no explosive vibration, and the chassis being hung on four coil springs, one at each corner, makes it ride as easily, in fact, easier, than any small car I have been in and equal to many of the large ones. It is small, convenient, fast, reliable and handsome in appearance. In fact, after my previous experiences, I am enthusiastic. During the past four and one-half months I have driven it with perfect mental and physical satisfaction. I believe it approximates the ideal car for a city physician. I have not driven it over any bad hills, nor over a very long stretch of

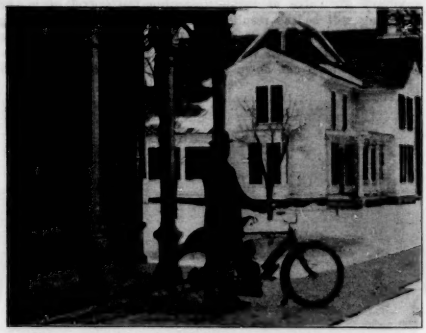


Fig. 13.—The handy motorcycle (147) of Dr. James E. Taylor, Ovid, Mich.

deep mud in the country, but I have done enough of this to satisfy me that it will go anywhere that any other car will go, regardless of size or power. It will not go as fast under such conditions as some might prefer, and this point, namely, lack of power to speed under difficult conditions, would be its only drawback, in my judgment.

FRANKLYN E. MCCLURE, M.D., Detroit.

A BUSINESS PROPOSITION

Last March I carefully read the discussion in the Automobile Number of THE JOURNAL, with the discourse on sparkplugs, carburetors, dirt, grease and soiled clothes, all of which was Greek to me. Immediately I sent for catalogues and had agents pester me till I had to seek shelter in the purchase of a car.

The first of May I purchased my first car (110), eighteen horse-power, friction transmission, water-cooled, 1,350 pounds, with a rumble seat, with top, for $875. This has carried me all summer without a hitch, on business and pleasure alike. I find that I have not made a mistake in buying a friction-drive car, as it transmits a greater percentage of power than the ordinary bevel-gear transmission, and eliminates a considerable amount of trouble common to the clutch.

I love my car for its simplicity, economy, ease of control, and light-running. It starts without a jerk, runs smoothly and has not the engine throb of the two-cylinder type. The speed is thirty-five miles per hour, and the friction transmission allows a large mileage per gallon of gasoline.

The control is simple, with only one lever, which places the friction wheel, traveling on a cross shaft, to any point on the

Fig. 14.—Cars (176, 178) of Drs. E. M. Fisher and H. A. Ingalls, Roswell, N. M.

friction disc, which gives the speed. On roads too bad for high speed work, and when slow speed is too slow, the simple adjustment of the friction saves time and gasoline.

The automobile makes work like play. I come home with a hearty appetite and do not scold my wife and family. Not yet have I failed to make a call, besides having more time at the bedside and more time for recreation and meeting more patients at my office.

I am a struggling young country doctor, with much of my work miles in the country over flint-stone pikes and mud roads; but not for double the price of my car and a few extra expenses for an occasional tire, etc., would I revert to the horse entirely. The automobile is strictly a business proposition.

A. H. CALHOUN, M.D., Wren, Ohio.

A GREAT TIME-SAVER

Since buying my car (172) I have depended entirely on it in all kinds of weather and over all kinds of roads. As yet I haven't found any hills I can't climb around this section. The original cost of a car such as I use is $750, without counting gas lamps and freight. The total amounts to about $800. Gasoline by the barrel cost 10 or 11 cents a gallon. Oil costs 40 cents a gallon in five-gallon cans. Solid tires are far less expensive than pneumatic, and there is no danger of punctures. New ones and repainting of the wheels cost me about $30. My expenses for repairs for the fourteen months I have had the car, including new tires, amounted to about $50. The cost per month, including everything, is about $7.60. The original cost and expense of running for fourteen months is little more than that of buying a horse and keeping it for the same length of time. Among the advantages over a horse are that the auto requires only about fifteen minutes or half an hour's care every day (some days not that); that it is ready at all hours, day or night; and that the doctor sees his patients in one-third the time and has more time at his office.

GEORGE W. O'GRADY, M.D., Lancaster, O.

THE CARBURETOR THE HEART OF THE ENGINE

THE CARBURETOR AND ITS IMPORTANCE

The most delicate part of the automobile power plant is the carburetor, a part that has puzzled the experts and even the most scientific automobile engineers even since automobiles were made a practical conveyance, as well for sport as for commercial use. Internal combustion engines have been constructed and placed on the market in great numbers and a great many have been fairly satisfactory. The general principle of the construction of the machine has remained the same and changes have mostly been confined to detailed improvements, while the little mechanism called the carburetor, which is the vital part of the power plant, has undergone most radical variations in construction. About three thousand applications have been made in the United States Patent Office on carburetors within the last few years. Of course they are all different, which goes to show the wide range of experiment to which the carburetor has been subjected. Yet comparatively few of the many different makes of carburetors remain on the market to-day and of these very few can be said to operate entirely satisfactorily.

Fig. 15.—The start.

The carburetor in most general use is of the float-feed type with automatic air intake; the gasoline is carried in a float chamber with its level slightly below the point of the gasoline spraying nozzle, which is generally mounted in the center of mixing chamber and surrounded by a tube so shaped that, when air is drawn in, it is deflected against the point of the spraying nozzle, and as the air velocity increases, the gasoline supply is also increased. The upper end of this tube is made larger so as to allow the gasoline vapor to expand into the mixing chamber proper where it is joined by air taken in through the auxiliary air valve. This valve is operated automatically by the suction from the engine; it has a delicate spring adjustment which is set so as to allow the right amount of air to enter corresponding to the amount of gasoline vapor drawn through the venturia tube. A low vacuum is always maintained in the intake manifold in order to draw gasoline from the spraying nozzle. As the gasoline is picked up and vaporized by the inrush of air through the carburetor, it can be readily understood that the speed with which the air travels has a great deal to do with the vaporization process. It is therefore very important to avoid as much as possible all sharp turns and corners in the carburetor as well as in the intake manifold. The proportion of gasoline and air required to make a combustible mixture would best be determined by weight, as it depends on the temperature and density of the air and changes in the atmosphere and altitudes will have much influence on the mixture, as in the high altitudes larger air openings in the carburetor or smaller supply of gasoline is needed than in the lower and heavier altitudes. Therefore a wide enough range of adjustment is generally provided on the modern carburetors to allow them to be readily set to the required conditions.

An over-rich mixture will form a carbon deposit in the explosion chamber and on the upper end of the piston which will often cause premature ignition of the gas and when an imperfect mixture is taken into the explosion chamber back-firing will occur, because the globules of gasoline continue to burn for some time after the explosion has taken place and when the intake valve is opened this fire is communicated to the intake manifold causing a second explosion which is partly discharged through the carburetor. Back-firing occurs more often when the spark is retarded because the ignition takes place later, making the actual time shorter between ignition of charge in the cylinders and opening of intake valve; also because the explosion takes place later or after the piston is on its downward stroke when the explosion is much weaker, consequently consumption of fuel is much slower.

When an engine is throttled down to run at slow speed there is no back-firing, because the mixture drawn into the engine consists of air being lightly passed through the manifold and is carrying with it into the engine only enough of fairly vaporized gasoline to make it combustible. If the throttle is then opened very slowly and the engine allowed to speed up gradually it does not back-fire because the air current is given time to pick up gradually and vaporize all gasoline deposited in the intake pipes. If the throttle is opened very suddenly the inrushing air will sweep up all the gasoline deposited both in the carburetor and manifold and will throw it into the engine in drops or perhaps it may be cut up into smaller globules, but if the gasoline is not thoroughly vaporized and the proper amount of air mixed with it, the action will be as before stated and the back-firing will be the result.

Often when not enough of air is taken in at the same time the engine will miss several explosions before it is cleared out. If the attempt is made to stop back-firing by tightening the auxiliary air valve or rather lessening the travel of it the following will be the result: The velocity of fixed air going through the carburetor is increased thereby vaporizing more gasoline, but the total volume of air going through the carburetor has been cut down so that there is not current with

Fig. 16.—The finish.

sufficient force to sweep the manifold clean of the unvaporized gasoline, especially if the opening in the manifold is a very large one.

The same thing that causes back-firing will cause overheating of the engine and exhaust manifold.

If a perfect vapor is made in the carburetor so that when auxiliary air is mixed with it it will be all combustible when delivered to the engine explosion chamber, there should be no trouble to ignite it. The combustion is then quick and perfect; there will be no carbon deposits and back-firing will hardly ever occur because there will be nothing to burn in the cylinder after the exploded charge is cleaned out.

JOHN S. GOLDBERG, Chicago.

THE CARBURETOR AND HOW TO LOCATE TROUBLE

If there is one part of an automobile more important than another, it is the carburetor. It is the heart of the gasoline engine, and, like its counterpart of the human body, is subject to functional disturbance in degrees, ranging from slight departure from the normal condition to utter inability.

It must be remembered that the power of a gasoline engine is due to the explosion of gas formed from the mixture of gasoline (or other combustible) with air in a close chamber. When the explosion of gas thus formed takes place, the confined air is instantly heated to a high degree, and, expanding, furnishes the power that runs the engine. It is necessary that the mixture of air and gasoline should be in the proper proportion, and, as the mixing is the function of the carburetor, we can readily understand the importance of the carburetor being maintained in a perfectly normal condition. Without a perfectly adjusted carburetor, it is impossible for the engine to reach the full limit of its power; it is therefore necessary that the owner should thoroughly understand his carburetor and be able to diagnose all trouble and apply the proper remedy.

A poorly adjusted carburetor will consume more gas and yet develop less power than a normal one. Everything else being equal, a carburetor once properly adjusted will need little or no attention.

To the beginner I recommend that other sources of trouble should be investigated before an attempt is made to correct the carburetor, for many times the fault is elsewhere. Evidence of a faulty carburetor is the lack of power. The engine may run well while the car is standing, but when the clutch is thrown on the car fails to develop the normal speed. Hill-climbing becomes laborious and occasionally the engine fails to develop sufficient power to propel the car on level roads.

It must be remembered, however, that a defective carburetor is not the only cause of this condition.

When the engine fails to develop the normal power it is well to look after the lubrication. See that every part of the engine that requires oil is abundantly supplied; this being the case you can exclude this as the source of your trouble.

Fig. 17.—The transportation problem—"And Sheridan twenty miles away."

Next go over your cooling system. Be particular to see if the pump is in good working order and that the water is circulating freely and that the supply of water is sufficient in quantity.

If this is in perfect condition you should then search for the trouble in the ignition system. Examine the batteries to see if they are sufficient in voltage to furnish a sufficient spark to explode the gas in the combustion chamber. Test your spark-plug to see if a spark is produced at each contact of the commutator; if not you have probably a short circuit, which should be located and remedied.

If the ignition system is found to be in working order you have now by exclusion brought your trouble down to the carburetor. Before attempting to make alterations in the adjustment, see that the valves that open and close at each stroke of the piston are in working order. Examine to see if there is any obstruction to the free flow of gas to the carburetor. Occasionally particles of dirt find their way to the tube that carries the gas to the carburetor, obstructing the passage. The intake tube, through which the air passes to the combustion chamber, occasionally becomes partially obstructed by particles of grass or dirt being drawn in by the suction, thereby interfering with the quantity of air, destroying the relative proportion of air to gasoline. This tube occasionally needs cleaning and should not be neglected in searching for the cause of trouble connected with the engine.

Fig. 18.—An Iowa practitioner taking his car out of the barn.

Let the readjustment of the carburetor be your last resort unless you have had experience and can positively locate the trouble in improper adjustment. The engine comes from the factory presumably in perfect working order, and if no accidents have occurred and the carburetor has not been tinkered with, it should be in good working order. It is not always an easy task to adjust an unruly carburetor properly, and unskilled attempts at adjustment may make the task of putting things right more difficult.

Different grades of gasoline may require slight change in the adjustment, yet it is well to wait a reasonable time before readjusting, for often the carburetor appears to adapt itself to the change in gasoline. The different seasons of the year and even the density or humidity of the air may from time to time indicate a slight readjustment. It is well, however, to wait and see if self-readjustment will not take place.

To show to what extent a carburetor can be made to do fairly good work under unnatural circumstances, I will relate a personal experience that may be the means of relieving some one who may find himself similarly situated. I was returning from the country in the middle of the night. When five miles from town my supply of gasoline gave out. I was two miles from the nearest house where I could get a supply. The thought occurred to me that perhaps kerosene oil might work. I took the oil from my oil lamps, put it into the gasoline tank, cranked the engine, and to my surprise and delight the engine responded and my journey was soon completed. At first the engine pounded, but I soon manipulated the throttle so that the pounding ceased and the faithful engine brought me home.

When readjustment seems necessary the operator should start his engine and then slowly turn the adjustment screw to the right and left and note the result. When the point is reached when the best result is obtained, the set-screw should be firmly tightened in order to fix the adjustment.

F. M. CRAIN, M.D., Redfield, S. D.

A DISCUSSION OF HIGH WHEELS AND SOLID TIRES OR LOW WHEELS AND PNEUMATICS

LOW WHEEL AND PNEUMATIC PREFERRED

I have driven four cars in my general practice in a town of 12,000 in southeastern Kansas in the last three years. The time saved by using an auto will pay for a moderate-priced car in one year. The up-keep and running expense is about that of a horse and buggy, while the machine will do as much work as three horses and do it more quickly.

I drive a low-wheeled car (120) ten or eleven months out of the year and observe that when mine is laid up by the

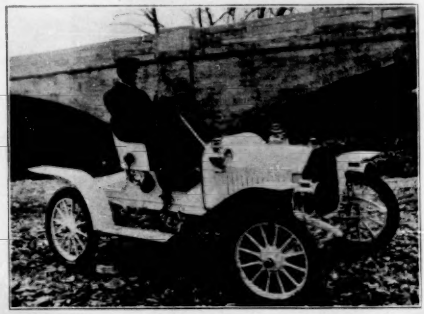


Fig. 19.—Dr. P. S. Mitchell, Iola, Kan., and his car (120).

weather the high-wheeled car is also quiet. All grant that the low-wheeler has the advantage on good roads (which at this place means ten months in the year), therefore I buy a car for ten months rather than for two. In three years I have had less than a dozen punctures and no blowouts in a road record of 10,000 miles. One good set of pneumatic

Fig. 20.—Dr. J. B. Hetherington, Logansport, Ind., and his enclosed car (157).

tires, if not overloaded, will outwear three sets of solid tires and not punish the engine and gearing as do the solid.

Cold weather hardly enters as an item against water-cooled engines in this climate, while the trouble that air-coolers have teaches me that, as a class, at least, they have by no means been a success. Likewise the two-cycle machines as a class have failed to make good here, principally because of failing to scavenger properly and because of holding compression. I can not see that they vibrate less than the four-cycle cars.

Having owned and driven one-cylinder (121), two-cylinder (120) and four-cylinder (120) cars, shaft and chain drive, large and small, my conclusion is that the car is almost indispensable to the busy doctor. One for the man of moderate means should be about as follows: Price, $800 to $1,200; horsepower, 18 to 24; four-cylinder, four-cycle, shaft-drive, water-cooled, cone-clutch and planetary gear (if a small car), weight 1,500 to 1,800 pounds, 30-inch to 32-inch wheels, 3½-inch pneumatic tires, 90 to 100-inch wheel base, with adequate springs, high tension magneto, runabout body or removable tonneau.

P. S. Mitchell, M.D., Iola, Kan.

ADVANTAGES OF HIGH-WHEELED AUTOMOBILES

High wheels travel all roads, because all roads are made to be traveled by high wheels.

This is the slogan of the builders of high-wheel types of automobiles, commonly known as motor buggies. The term "motor buggies" only partially defines this class of automobiles, however, for the high-wheeled commercial vehicle is now being developed very rapidly and bids fair to outstrip the already well-developed passenger vehicle.

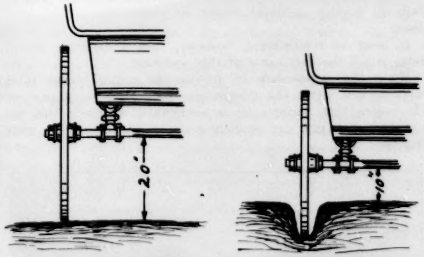


Fig. A.—Normal road clearance of high-wheeled machine. Fig. B.—Plenty of clearance in mud or ruts.

High wheels have a feature peculiarly their own, in their ability to travel all kinds of roads ordinarily traveled by horse and buggy. The low-wheeled types, owing to their low axle clearance, are not adapted to travel over country roads, with their deep wheel ruts or high center ridges. The high-wheeled machines were first built because so many persons found it necessary to travel both city streets and country roads that a demand soon arose for an automobile adapted to both. High wheels allow an axle clearance of from twenty to twenty-four inches, which is as much as that of the ordinary horse-drawn vehicle; hence the justification of the claim that "high wheels travel all roads because all roads are made to be traveled by high wheels."

The greatest bugbear of automobiling to-day is the unreliable, extravagant and even dangerous pneumatic tire. This fact and the demand for greater road clearance are the two great reasons for the popularity of the high wheel. Pneumatic tires are an extravagant luxury, and manufacturers of low-wheeled automobiles would gladly dispense with them to-day if a satisfactory substitute could be devised or discovered.

Solid rubber tires on low wheels are impossible for rapid locomotion or for use on rough roads. They are not only possible, but are entirely practicable on high wheels.

Six years ago the first high-wheeled passenger automobile was placed on the market; for three years it was the sole

representative of this type. At the end of that time other manufacturers began to wake up to the fact that this type was fast becoming popular among a certain class of automobile users, and immediately began to experiment in this direction, until at the present time there are between fifty and one hundred manufacturers either building or developing high-wheeled machines.

High-wheeled automobiles as a class are not so widely separated from the low-wheeled automobiles as they were a few years ago, and the difference is rapidly being obliterated. As a matter of fact, the high-wheeled machines are simply a continuance of the wheel diameter where the low-wheeled machines leave off.

Builders of the so-called low-wheeled machines stop at about thirty-six inches wheel diameter, and makers of so-called high-wheeled machines commence at about thirty-six inches and continue up to about forty-eight inches, the height of the ordinary buggy or carriage wheel. Wheels under thirty-six inches usually require pneumatic tires, and thirty-six inches diameter is about the limit for pneumatic tires on account of their cost; whereas wheels over thirty-six inches in diameter do not require pneumatic tires, and hence use the solid rubber tire exclusively.

Instead therefore of using the classification "low wheels" and "high wheels," it would be just about as accurate to classify automobiles as "pneumatic-tired" and "solid-tired." The classification of "high wheels" and "low wheels" is more descriptive of the types, however, and hence is the one generally used.

Automobile builders first adopted the low wheel and pneumatic tire, following the bicycle type, perhaps owing to the belief that pneumatic tires were necessary for comfortable riding and protection to the machinery. It has been found entirely practicable, however, to use large wheels with solid rubber tires with practically the same, and under some conditions better, riding qualities and protection to the mechanism of the machine. When this fact was demonstrated beyond a doubt, the professional and business world immediately turned toward the high-wheeled, solid rubber-tired type of automobile as being more economical of up-keep and as offering greater roadability.

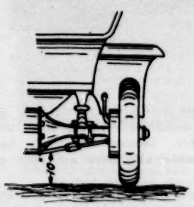


Fig. C.—Normal road clearance of low-wheeled machine.

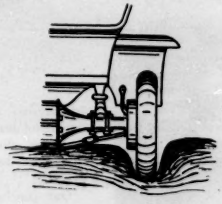


Fig. D.—Lack of road clearance in mud or ruts.

An important feature of the high wheels is that, being narrow and protected by steel channels, the rubber is not injured when the wheels are traveling in deep ruts, as the tires escape the terrific rasping effect of the dried or frozen sides of the ruts which so quickly tear the pneumatic tires to pieces.

High wheels consume less power on rough roads than do low wheels, because an obstruction is less of an obstacle to a large wheel than to a small one. As a hill is nothing but a series of obstructions, high wheels are therefore also better hill-climbers than low wheels.

Strange as it may seem, high wheels are really stronger and less liable to break than low wheels. This is due to the fact that all high wheels are dished, so that when the vehicle skids sideways and strikes an obstacle, the dish of the wheel acts as a truss and braces it. Low wheels are not dished, but have the spokes set perpendicular to the hub, and hence are unable to withstand a severe side strain or shock. Then, too, the long spokes of the high wheels are flexible and will bend considerably before they will break; whereas the spokes in the low wheels are too short to be flexible, and since they can not bend they break. The long spokes of the high wheel also render the wheel somewhat resilient, and there is less necessity for pneumatic tires than on the low wheels, the spokes of which are absolutely rigid.

High-wheeled automobiles are now in use in every civilized country in the world, and have demonstrated that they are here to stay, as they meet requirements for which they alone are peculiarly adapted. The field for this type of vehicle is just barely touched, but it is spreading rapidly now that the gasoline motor has been made thoroughly dependable in the hands of an ordinarily careful user.

Fig. 21.—A group of high-wheelers (191) in North Dakota, some of which have been in use four or five years.

Physicians and other professional men early welcomed the high-wheeled machine with the high-road clearance and trouble-freed solid rubber tires, and now the department store, fire department, mail-carrier, laundryman, groceryman, liveryman and scores of other businesses are already making extensive use of this most sensible and serviceable vehicle.

Being now completely commercialized, it is recognized in all automobile shows, expositions and trade papers as a standard type. Its development and growth have been spectacular.

Fig. 22.—A high-wheeled car (168) in New Zealand.

The low first cost and economy of up-keep, together with the great possibilities of the high-wheeled car, make it very probable that within the next five years there will be more high-wheeled automobiles in use than of any other type.

W. HILDRETH, Chicago.

USES BOTH STYLES

I have been using motor vehicles exclusively in my practice since July, 1903. I now use an enclosed automobile (157) of the direct drive, pneumatic-tired type except on muddy roads, when I use an enclosed machine of the high-wheeled type

(158). Both machines have double opposed cylinder of twelve horse-power, are very simple in construction and reliable.

I consider the pneumatic tire better adapted to ordinary roads and more comfortable on them. There is not so much vibration and the machine looks better. When the road is muddy it requires much more power to force a pneumatic tire through the mud than a narrow solid tire, but when the roads are good, riding on air is far more comfortable. In mud one gets bumped anyhow, and it is unpleasant to have the engine working to its limit against the mud when the high wheel with narrow tire goes so much more easily.

For practical work a physician's machine should be as simple as possible. Either type of bare tires will slip in slick mud, though the pneumatic holds best on ice.

The pneumatics are a little more expensive than solid tires, though not as much so as one would expect, if large pneumatics in proportion to their load are used. The solid tires batter to pieces, while the pneumatic continues good. A heavy car means tire expense with either solid or pneumatic tires.

I prefer an engine under a bonnet where it is easily inspected. On my old car (159) it was difficult to get at the engine under the bed. Then I was always afraid of the chain drive. One of our physicians has been wrecked twice with different cars by having his chain climb the sprocket.

J. T. HETHERINGTON, M.D., Logansport, Ind.

Fig. 23.—Dr. M. P. Hughes, Gadsden, Ala., in his trim motor car (109) referred to on p age 809.

to run in on frozen ground. You can not do that with pneumatic tires.

The cost of up-keep is low. Our first set of tires will last us well into the coming season, and they cost $7 each for the best grade of rubber. You can not keep a team shod cheaper than that.

One reason we selected this machine was that it is made by an old reliable carriage house with an established reputation, and we knew them to be strictly on the square. Their work and material is first-class, and if anything is not right they will make it right. As much can not be said of some of the mushroom automobile houses.

The high-wheeled automobile is not a fancy rig, nor is it as speedy or comfortable as the other type; but it is cheap

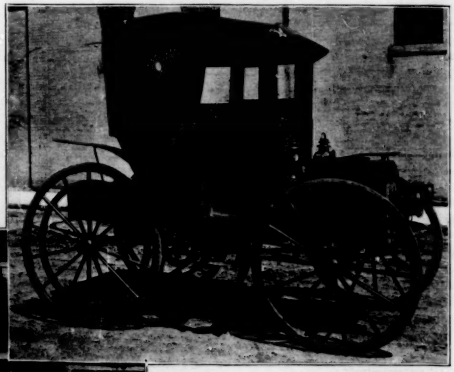


Fig. 24.—The inclosed carriage (102) of Drs. P. E. and Fred Sheppard, Hutchinson, Minn.

in original cost and up-keep, and will go when the others will not. It is cleaner, too, for the doctor, because there is less dust and because all parts are easy to get at.

Our conclusions, then, are: If you are buying a luxurious machine for pleasure, to run fast in fair weather and on good roads, and if expense is no object, get a low one with pneumatic tires. If you are buying for business and economy, get a hard-tired, high-wheeled one. It is a good investment.

P. E. SHEPPARD, M.D.
Hutchinson, Minn.

HIGH-WHEEL AUTO NOT FANCY BUT PRACTICAL

A year ago my brother and I were in the catalogue stage of buying an automobile. We looked forward to the coming of the Automobile Number of THE JOURNAL as one of our main sources of help in deciding what kind of a machine to buy. We decided in favor of a hard-tired, high-wheeled machine (102), so now we wish to add our testimony that it may help some one else.

We have a medium weight twelve horse-power machine, with a full shelter top, which insures comfort in bad weather. We believe that it does not pay to run any machine in mud, but if we get caught in a rain we can always get back without getting wet or spattered with mud. After a rainy spell we are always out several days before any of the low-wheelers because we can run in a rut. We ran up to December 15, when enough snow fell for sleighing. We ran in ten below zero weather with comfort and ask nothing better than a rut

A SAD EXPERIENCE WITH HIGH WHEELER

In the spring of 1908 I bought a high-wheeled runabout (140) for $500. From the start it has been a series of breakdowns and disappointments. The mechanism is so loosely put together and so poorly devised that it makes more noise than a farmer's wagon. Instead of steel I found cast-iron in many places such as rocker beams, high-speed traveler, clutches, etc., that were continually snapping off. The chains being so light as to stretch on the hills, would keep running off the sprocket wheels.

In this country the cobblestones in the road constitute the greatest obstacle to any enjoyment in a high-wheeled auto. Those cobblestones just knocked the machine out of adjustment and broke the bearings as a regular thing. When the management remedy these weak places I presume this machine will do on smooth dirt roads; but for cobblestones and hills it is too cheaply constructed for daily use.

My engine being air-cooled, I had visions of running through the snow; but it was only a pipe dream. The machine absolutely won't work when the temperature is less than 20 degrees above zero.

Altogether, I am sore on high-wheeled, solid-tired auto buggies. H. C. WORTHINGTON, M.D., Beloit, Wis.

QUESTIONS ASKED AND ANSWERED

Is the automobile a reliable and satisfactory substitute for the horse-drawn vehicle for the doctor's use? Yes, for doctors practicing in cities and towns. In any country district where the roads are fairly good, also yes. For muddy, clay or slippery roads in wet seasons, no. Sand has been regarded as a serious objection, but if the tread of the automobile is the same as that of the other vehicles using the highway this objection does not obtain.

Is the up-keep greater than for buggy and team? This depends entirely on the driver. One man will take care of machinery and another will not. If one horse and buggy will do all a physician's work, and if he does not need a driver, an automobile will be a greater expense. If he has a large territory to cover and requires more than one horse, an automobile will save many hours each day, cost less to operate, and the greater amount of work permitted will greatly increase the income.

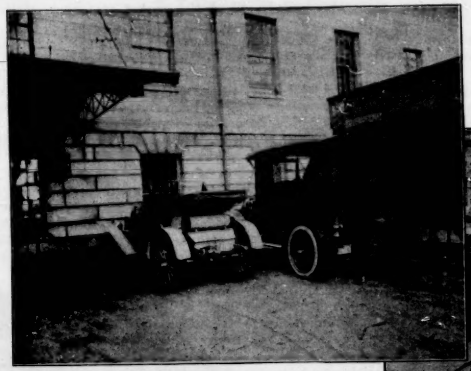


Fig. 25.—Rear view of Massachusetts General Hospital, showing cars (195) of two of the attendants, Drs. John Bryant, Jr., and Herman F. Vickery, Boston.

Does not the first cost make the automobile a luxury, and does not this investment deteriorate more rapidly than with horses and vehicles? Once again, this depends on the driver. I have run my car over 12,000 miles, as roughly as is possible, over every imaginable sort of road, but it is in better shape, runs more smoothly, has more power, requires less attention, than during the first year of its service. I believe that with the same care it is getting at present, six or eight years is too short an expectancy of life. Its average cost to me, excluding original price, has been $50 a month. This is $25 less each month than my horses and buggies and driver cost me for several years. I bought a high-grade car (125), $3,000 list price, twenty to twenty-four horse-power, four-cylinder, double chain drive, two or four passengers. I use it exclusively, and am so well pleased that I would not go back to the horse for any consideration; I had rather quit general practice. Not only this; to live without a car would be next to not living at all.

What type of car should a physician buy? In a large city, any will do the work; means and individual taste should be the guides. No further advice is necessary. In small towns or country the consideration of this problem is important, for on its successful solution and on careful discrimination depend great pleasure on the one hand and profound disgust on the other. Here high power, medium weight and extraordinary strength in construction are essentials. Exceedingly strong axles and frame, and greatest possible strength and flexibility in springs, supplemented in all cases with shock-absorbing devices, must not be overlooked.

What about the high-wheeled car? I bought one (124) for wet weather, and am having it remodeled. It ran indifferently for three months. Timer and coil were cheap and useless; chains too small, sprockets of poor construction, and the oiler was a joke. I am having these replaced with standard and tried types and hope to have a car which will be durable and usable from the business point of view. I fear that many cars of this type are made cheaply and to sell. This car is not now on the market, I understand. I believe that, when block chains are discarded and the speed is reduced to a maximum of fifteen miles an hour, and when the same quality of materials are here used that are employed in the regular types, then a motor buggy will be the cheapest and best possible means of conveyance for the country doctor, and one that will absolutely supplant the horse.

Think of a speed of thirty miles an hour for a motor buggy! Only a fool or maniac would dare approach it. Yet such machines are made to travel that fast, at a great expense of power, on paved streets or macadamized roads. Low speed means high power; a ten horse-power engine geared for thirty miles an hour will not negotiate the ordinary roads satisfactorily on high speed. The average ratio of gearing in these vehicles is 1 to 5, when it should be 1 to 8 or even 1 to 9. If you are going to buy a motor buggy get either a low speed, heavy roller chain drive, or at least 1¼ inch pitch with ⅝-inch roller chain, 12 horse-power, 36 or 38-inch wheels, planetary transmission, wheel steer, or postpone your purchase, or buy a single-cylinder machine for the same price. F. G. DU BOSE, Selma, Ark.

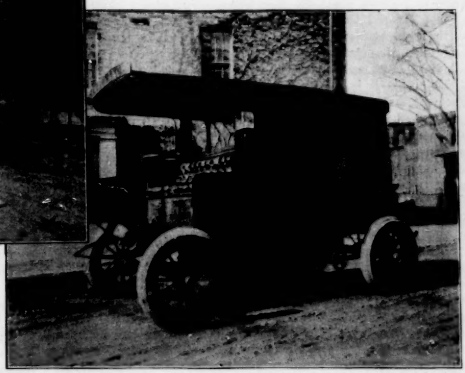


Fig. 26.—One of the automobile ambulances of Massachusetts General Hospital.

Ninety per cent. of automobile troubles, probably, were removed when I had my car (170) equipped with a magneto (171). Since that time I have run it every day over mud, snow, ice and good pavement with the exception of one week, when it was too cold for comfort—all this in southeastern Wisconsin, which is not noted for its good roads, and without one cent for repairs of any kind. The car is always ready to go. I can get greater mileage at a faster rate and with less inconvenience than I could with any horse.

L. F. GARLOCK, M.D., Racine, Wis.

THE LUBRICATION PROBLEM

SOME PLAIN STATEMENTS ON OILS

I sincerely regret that I am not as able as I am willing to give information of more practical value in regard to the lubrication of motor cars. This is not due to lack of knowledge, for I have had a quarter of a century of experience in the manufacture of high-grade lubricating products made from petroleum and a thorough and scientific knowledge of the chemistry of oils. I have also had several years of experience in the lubrication of my own cars and those of my friends.

It is an unfortunate fact that there is no one test or combination of tests that is of much or any value in the hands of the layman, however valuable these tests may be in the hands of an expert. As a few cheap tricks in blending can give to a very inferior oil the physical characteristics, or qualities answering scientific tests, that pertain to the best oil, about all that I or anyone can do is to give some broad facts and expose some of the deceit and duplicity with which the business is saturated.

In the operation of a motor car, oil is used for the lubrication of the bearings and of the cylinders. In the lubrication of the cylinders the most important function of the oil is to form a packing for the rings so as to prevent the force of the explosion passing by the rings with consequent loss of power; hence it follows that the more viscous or heavy-bodied the oil may be and the more freely it is applied, the better will be the compression and the more power produced. And, I may add, that where cylinders are not ground to perfect roundness and well polished, or where the rings do not fit or are weak, it is all the more essential that an oil be used that will maintain a high viscosity or consistency under heat.

Any half-way decent oil is good enough if freely used to lubricate the cylinders, so far as the item of lubrication is concerned; and a comparatively poor oil freely used will produce compression if the cylinder is highly polished and perfectly round and the rings are an exact fit and strong. But these conditions seldom are combined, hence, to produce the greatest possible amount of power, a highly viscous oil must be used and used freely.

With every increased degree of heat the troubles of lubrication multiply. The higher the heat, the more the oil is liquefied, so that it forms a poor packing for the rings, and hence the more essential is it that a highly viscous oil be used. But, unfortunately for the man who operates an air-cooled car, the more highly viscous an oil is, the more carbon it produces; hence a selection must be made between comparatively poor lubrication and comparatively poor compression, with comparatively little carbonization on the one hand, or better lubrication, better compression and some more carbonization on the other. There is no getting away from these facts.

The claims made by one and another that the oil they sell is non-carbonizing are utterly untrue, as there is no oil made or ever will be made that will not produce smoke when burned; in other words, that will not carbonize under heat. Broadly speaking, the poorer the lubricating quality of the oil, the less it will carbonize. This is equally true as applied to an air-cooled or water-cooled car. This is true, however: an oil that will give comparatively little carbonization and comparatively good compression in a water-cooled engine, run at a moderate heat, will give a good deal of carbonization and poor compression and poor lubrication in an air-cooled motor.

Whether a man runs an air-cooled or water-cooled motor, he must make his choice between an oil giving poor lubrication and compression and comparative freedom from carbonization, or the reverse; or, to put it another way, between a blended oil of high viscosity or a straight neutral oil of weak viscosity and poor fire test.

The four chief products or distillates from petroleum include gasoline, benzin, burning oil or kerosene, and what is commercially known as neutral oil or familiarly known as spindle oil. This is the last thing distilled over in the operation of reducing petroleum for cylinder oil, such as is used in steam cylinders. Paraffin oil is produced by the destructive distillation of petroleum tar or the carbonized oil that is left in the bottom of the still, and is the poorest of all petroleum products, so poor that it is seldom sold under its proper name. It is acid-bleached sometimes to a pale lemon, but generally of a dark red color. It runs in gravity from eighteen to thirty, but more ordinarily from eighteen to twenty-eight.

Neutral oil runs from thirty, or more ordinarily from thirty-one to thirty-five; so, unless trickery has been employed in blending the two, a hydrometer test will at least tell the buyer whether he is using paraffin or neutral. Neutral oil is made all the way from absolutely water-white to comparatively dark red. A neutral oil is a much better lubricant than paraffin, although a more fluid oil at normal temperature and has less tendency to carbonize. All of the better grades of gas engine cylinder oil on the market are either straight neutrals or neutral blended with filtered cylinder oil.

Now, it is an unfortunate fact that a straight neutral oil, extremely fluid at normal temperature, becomes much less viscous under heat, and the higher the heat the thinner it becomes, and hence the less compression it will produce. But it has the advantage of giving comparatively little carbonization, and the higher its gravity and the less viscous it is, or in other words, the poorer the quality, the less the carbonization and the poorer the lubrication.

The real lubricating value of petroleum lies in the residual left in the bottom of the still after the distillates and neutral oil have been distilled off; in other words, the cylinder oil, such as is used in steam cylinders. This, as compared with neutral oil, is enormously high in viscosity and in fire test and in lubricating value, but unfortunately, for reasons above stated, has a greater tendency to carbonize.

I have found that the addition of a moderate percentage of cylinder oil, whether used in air-cooled or water-cooled cars, adds immensely to the lubricating value of a neutral without materially increasing the carbonization.

Dealers in automobile oils well nigh universally recommend a straight neutral oil, as it is attractive in appearance, cheaper, easier to sell and produces less carbonization, the evils of which are immediately manifest, while the result of undue wear is remote and the loss due to improper compression is not recognized. A properly blended oil will ordinarily give 25 per cent. more power than a straight neutral, and under some conditions 50 per cent. more. Except when trying out oils, I have always used a blended oil on my own cars. On taking out the engines after a run of 10,000 miles, I have found them highly polished, the rings free from any carbon deposits, not a bearing anywhere in the car that even showed a trace of wear. I have seen the same make of car, handled by a better man than myself, run with much less mileage, lubricated with best neutral oil that money would buy, on being taken down, show very serious undue wear. The average chauffeur prefers a straight neutral, and the poorer the quality the better he likes it, for the reason that it produces somewhat less carbonization than a blended oil. Although a blended oil costs more to manufacture than a straight neutral, I prefer it for my own use, not because it is more economical (as it is), but because I want out of my own car the greatest amount of power and the least undue wear. I should add that the cylinder oil used in blending should be a well-filtered oil.

A word in regard to the matter of color. A neutral oil is red as it comes from the still. This can be bleached with sulphuric acid at hardly any expense or filtered through bone and fuller's earth, until it is exceedingly light in color. Neutrals are made all the way from water-white to dark yellow. The assertion made by some that an oil extremely light in color contains less carbon than a yellow or red oil is a piece of rank duplicity without even the semblance of truth except in a purely technical sense. The small amount

of carbon in a comparatively dark red oil would under no circumstance whatever leave even a trace of carbon deposit; it would not do it if it were as black as ink. It is the burning of the oil that produces the carbon deposit; just this and nothing else, and the richer and better the oil the more carbon deposit it will produce.

After all, the use of a low gravity gasoline is more productive of carbonization than lubricating oil. Much of the gasoline on the market is practically nothing else than a low-grade kerosene blended with high gravity gasoline, and hence, is a smoke producer.

My entirely disinterested advice to the operator of either an air-cooled or water-cooled car is to use the most viscous oil obtainable that will not result in undue carbonization.

Just a word regarding the lubrication of gears. If grease is used let it be as soft as may be without undue leakage through the cracks. Where too hard grease is used, an undue retardation is occasioned. A hard grease makes the car run heavy. I consider the use of a coarse-flaked graphite desirable, chiefly because it forms a cushion and makes the gears work more quietly.

T. T. SOUTHWICK, Rochester, N. Y.

DISSOLVED LUBRICATION FOR GASOLINE MOTORS

The lubrication of motors by dissolving the lubricating oil in the gasoline, and thus leading it into the motor with the fuel supply, has aroused not a little interest in the gasoline engineering world, though the process is by no means new. It has been used for many years in some two-cycle motors, where the gasoline with the lubricating oil is sprayed into the crank case, whence the gas is afterward forced into the cylinders while the lubricating oil remains to lubricate the pistons and bearings.

The process is good for two-cycle motors of the crank case compression type, and has no disadvantages. It is just as good for four-cycle motors, providing the crank case be used for the passage of the gasoline spray or gas from the carburetor to the cylinders and providing the moving parts and bearings of the motor may be exposed to the free application of oil from the crank case, as is usual in automobile motors. It requires the inlet valve to be placed between the crank case and the cylinders, preferably in the piston head, where its proper operation is assisted by the movement of the piston and the inertia of the valve itself.

The simplicity of the process is its chief advantage. All good lubricating oils are thoroughly soluble in gasoline in the proportions necessary for proper lubrication. The oil when dissolved in the gasoline has no effect on the operation of the carburetor or vaporizer. All that is necessary, therefore, to lubricate the working parts of a motor arranged for it is to ascertain the amount of oil per gallon of gasoline fuel and add that proportionate amount to the gasoline tank with each new charge of gasoline. No anxiety need follow as to whether the motor is being lubricated or whether the lubricating mechanism is working or discharging the proper amount to each of the several places needing it, for so long as the solution of fuel and oil lasts the motor will receive its regular quota of oil without any variation and exactly in proportion to the amount of fuel used, and hence in proportion to the amount of work the motor is called on to perform.

The process is easily understood. If a small quantity of non-volatile oil be dissolved in gasoline and sprayed from an ordinary atomizer into a warm cylinder or cup of metal or glass, it will be found that the gasoline spray issuing from the nozzle immediately vaporizes and becomes an invisible gas and the non-vaporizing oil of the spray condenses and is deposited in a thin sheet of very fine globules on the interior surface or falls to the bottom. This is exactly what happens in a gasoline motor arranged for this method of lubrication. The gasoline enters the nozzle of the carburetor from the supply tank as a liquid carrying its quota of oil in solution as easily as water would carry a small quantity of salt in solution. When it leaves the carburetor in the form of a fine spray and enters the warm crank case the gasoline instantly becomes gas and the oil spray, which can not thus vaporize, is instantly condensed, and as it enters in swift motion, if directed toward the parts needing lubrication, it will be deposited instantly on them and thereafter fulfil its function as well as if it were forced to the place by another process.

Since the gasoline tank and pipe must be liquid-tight to hold the gasoline, and since the whole process of separating the oil from the gasoline is a suction process, there can be no loss of oil and no distribution of it over the outside of the motor and machine, where it serves only to hold dust and dirt and to communicate it eventually to other parts and to the operator's hands and clothing. If there were no other advantages, this one of cleanliness would commend this process to all automobile users.

The mechanical advantages of this method of lubricating gasoline motors over any other method are so apparent that it seems scarcely necessary to mention them. The cover to the opening in the gasoline tank of a gasoline automobile or boat can be arranged with a cup on the inner side and graduated so that when the gasoline tank is replenished with gasoline the corresponding amount of lubricating oil may be poured into the cup and dumped into the tank, presto! the lubrication is attended to once for all as long as the motor runs on that charge. There is no chance that it may be affected by the cold; that a warm place will get more than it needs and a cold less; that a feed pipe may be broken or disconnected or choked.

When the solution method of lubricating the motor becomes common all these exasperating difficulties will have vanished.

H. K. HOLSMAN, Chicago.

BALL AND ROLLER BEARINGS

In motor construction the chief advantages of ball and roller bearings over plain bearings are: Longer life of the bearings, elimination of the necessity of scraping and refitting bearings, possibility of attaining greater speed with their use, simplification of the oiling problem, and saving of power; that is, fuel.

The chief objections are the original expense and the liability of breakage. The first is offset by the various savings in oil, fuel and repairs just mentioned. The second objection is being overcome by the advance in construction, which is attested by the continual extension of the use of the device to new parts.

Practically every car now uses the annular type of ball bearings in transmission cases and shaft-driven mechanism. The advantages of ball bearings on cam shafts are also admitted to be great. The next portion of the mechanism to which this device seems about to be successfully applied is the motor crank shaft. The strain on ball bearings in the crank shaft is greater, to be sure, than on the bearings in some other parts of the car; but ball bearings are successfully used in other mechanisms in which the strain is much greater. Many cars of foreign make and design have cylinders of *en bloc* construction (cast solid), the object being to shorten the crank shaft and permit the use of ball bearings on it.

It has been predicted that, in the near future, no car can be successfully marketed as a first-class machine if it has a plain-bearing motor. JOHN WILSON DROWN, Philadelphia.

KEEP AUTO CLEAN AND WELL OILED

A physician who has used both horse and automobile needs no argument to be convinced of the merits of the auto. He has more work time, more leisure time and more pleasure all the time. The up-keep cost will depend almost entirely on the care and judgment used by the driver. Keep the machine free from dirt and well lubricated, use some discretion in driving over rough roads and the up-keep cost will be very little. I have never seen any great difference in lubricating oils, having used them varying in price from 22 cents per gallon to $1 per gallon. I have a runabout (auto 161, illustrated on page 809), which does about all any one could ask of an automobile. You do not have to have a $10,000 cash practice to own an automobile as I have seen stated by some physicians. Doctor, get an automobile and take your wife with you on your country trips and see how much more pleasure there is in making country calls.

B. S. HERRING, M.D., Wilson, N. C.

ALL SORTS AND CONDITIONS OF AUTOS

THIS MAN IS WELL PLEASED

During the past eight months I have found my car (114) a very satisfactory investment. My car goes well, both on hills and in mud, and I think it will go where any car ought to be expected to go. It has friction drive, chains to both rear wheels, wheels thirty-nine inches high, with one and three-eighths-inch solid rubber tires, wheel base seventy-four inches. The engine is two-cylinder, eighteen horse-power, water-cooled, and is placed under the deck back of the seat, so that any necessary adjustments may be made quickly and comfortably. This car is very roomy in front, and is an easy rider. I find the friction drive simple and satisfactory; it has cost nothing for repairs.

My average monthly expense has been less than $8. This does not include license fee and insurance. I take care of my car myself, and I have had a mechanic take apart and demonstrate everything in the car to me, so that I know exactly what I have.

After my first week I have always reached my destination on time and without assistance. This car commends itself to me because it is simple and easy to care for and operate; because it is well made and has been in condition to go every day.

Figs. 27 and 28.—The low-wheeled car (145) of Dr. James E. Tytler, New York, and the high-wheeled rig (172) of Dr. G. W. O'Grady, Lancaster, Ohio.

G. A. Chilgren, M.D., Burlington, Iowa.

DON'T BUY A CHEAP CAR

I have been using a runabout (154) in my practice for about a year, and am well pleased with it. I had some disappointments at first, but since I have learned how to regulate the carburetor my automobile troubles have vanished.

I take care of my car myself and find it easier and cheaper to care for than a horse and buggy. My repair bills have not exceeded $5. This has been for repair of punctured tires and broken spark plugs. My car is light and quiet running, and although it has none of the "frills" of the high-priced cars, yet it has all the features regarded as standard by automobile makers, having a four-cylinder, four-cycle, water-cooled engine, sliding gear transmission, multiple disc clutch and shaft drive. I have plenty of power for all the hills and mountains of this locality.

I prefer pneumatic tires. Punctures will occur, but they are generally quickly and easily repaired. Solid tires are much less comfortable to ride on and they require more power to cover a given distance on the average roads. The increased vibration is apt to cause more trouble with the engine, carburetor and other working parts, and also cause crystallization of the frame and axles which may suddenly result in a serious accident.

To prospective purchasers I would say: Buy an automobile, not a motor buggy, for most of the motor buggies I have known have been disappointments. Buy of a well-established maker with a reputation. It takes time, experience and brains to design and build a reliable car. Don't waste your money and time on cheap experiments. A very large percentage of the manufacturers of five years ago are not in the business to-day, and most of their cars quit doing business before they did, and are now on the junk-pile. It is difficult and expensive to replace any broken parts on such cars.

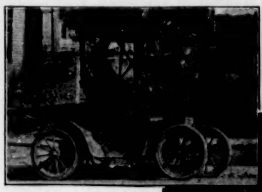
C. H. Gurney, M.D., Rossville, Ga.

A CONSERVATIVE OPINION

It should be emphatically impressed on the average doctor who is struggling along to make both ends meet, and to put aside a competence for old age, whose practice one good horse will serve, that a change to the automobile will not better his financial condition. This will be especially true if his practice extends over the ordinary country roads, for with the ruts and washouts the speed of an auto has to be greatly reduced, and therefore little time can be saved over that of the horse-drawn vehicle. Breaks are bound to occur. My experience has been with a machine regarded as one of the most reliable, and I must give it the credit that in nearly two years' use over some very rough roads it has never failed to bring me home. It will be apparent, no matter what the theory is, that in practice a horse will have to be kept while an auto is undergoing repairs, and that it will take $300 a year to run an auto costing $900 to $1,000. This includes tires, oil, repairs, taxes and depreciation in value. In five or six years it will be so worn that it is unsafe to use.

The closest attention should be given worn parts, for if a wheel should run off, or an axle break, or the steering gear refuse to guide while you are going forty miles an hour, death or crippling injury is pretty sure to follow.

I equipped my machine with solid tires (156), thinking that the problem of tire troubles was thereby solved, but after running not two years both rear tires loosened up and one of them ran off over the rim that held it on. The solid tire will eventually stretch, and will have to be sent to the factory to be made smaller. Considering the greater resiliency, ease and comfort in riding, as well as the necessarily longer life to the machinery, the pneumatic tires would be ideal, provided a first class reputable kind is selected. A physician who lives in a country with good roads, likes to care for machinery, has a good practice, and is willing to pay for a luxury that costs more than a horse and vehicle, can save much time by the use of an auto. The exhilaration experienced in the swift-moving, comfortable machine makes the arduous life of a doctor a pleasure and reduces to a minimum the tired feeling of a busy day's work.



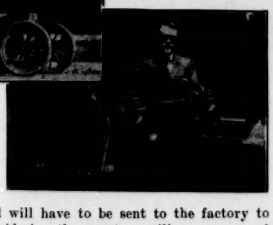


Fig. 29.—Auto (179) of Dr. J. E. Asay, Rock Island, Ill.

Fig. 30.—Dr. E. W. Mitchell, Cincinnati (180).

Charles Farquhar, M.D., Olney, Md.

SATISFACTION WITH A HIGH WHEELER

Only a few years ago a physician who owned and ran an automobile could find little time to practice medicine on

account of exasperating troubles and innumerable breakdowns. To-day the up-to-date doctor feels that he can not successfully practice his profession without his friend, the automobile. It seems that the practice of medicine and the pleasures of automobiling now go hand in hand never to separate. This wonderful change is no doubt due to the untiring efforts of mechanical engineers all over the country who have worked the imperfections out of them step by step. Machines may be obtained now which are so trustworthy that we would never for a moment think of going back to the horse. When I am compelled to ride behind a horse, which is seldom, it seems impossible that I could ever have tolerated, much less enjoyed, such an experience.

I began autoing about eight years ago. My experience with imperfect machines and pneumatic tires have left a blot on my mind which will require considerable blessedness to remove.

Not to be discouraged, however, I continued these exasperating experiences about two years. About six years ago I purchased a high-wheeled buggy automobile (173) because it seemed to me that this was the form an automobile should assume in order to be an every-day success. After running this make of car through all conditions of roads and weather during this time, I congratulate the manufacturers on the success they have attained in the perfection of this car.

C. H. BRYAN, M.D., Chicago.

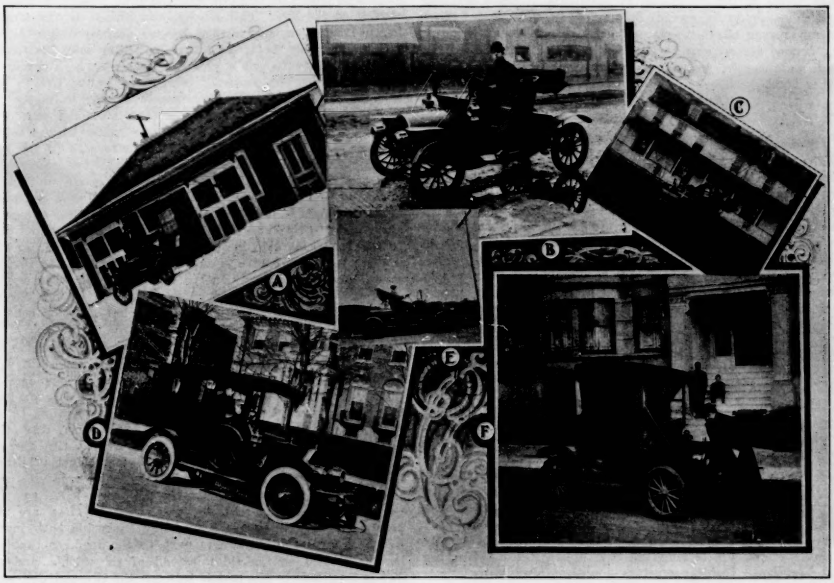


Fig. 31.—A—Dr. H. M. Wheeler, Grand Forks, N. D., and his combination garage, woodshed and kennel. (Auto 103.) B—Dr. George E. Baxter, Chicago. (Auto 181.) C—Dr. Charles Farquhar and family, Olney, Md. (Auto 155.) D—The car and chauffeur of Dr. H. Tuholske, St. Louis. (Auto 188.) E—Dr. Hugo Ehrenfest, St. Louis. (Auto 164.) F—Dr. H. A. Lothrop, Boston, and car (187).

INSURANCE AND PERSONAL PROPERTY TAXATION

From the *Lancet* (London), Jan. 2, 1909, we quote the following remarks by C. T. W. Hirsch, on "Insurance and Depreciation in Personal Property Assessments":

One vital matter is the question of depreciation and its effect on the value of the car for the purpose of ascertaining the annual premium. Practically the premium is based firstly on the value of the car, and secondly on the horsepower. The latter, as a rule, in a good make of car does not vary for, say, the first four or five years of an automobile's existence, or should not if the owner looks after it; but the former does, even though the possessor takes care of his machine. Anyone who, becoming infected with the desire for a more powerful or other make of mount, tries to dispose of his present one will quickly find that out. Change may be delightful, but it means dropping a "mint of money." And this brings me to the problem submitted to me by various friends: Supposing a car, for argument sake, is bought in December, 1908, and costs, say $3,000, and is then insured for all the usual liabilities for that amount, the query is, What ought it to be insured for in December, 1909, and December, 1910? Under most policies accidental damage is only paid on the full value at the time of the accident, so at the end of the first year, though the car is insured for $3,000, if it was absolutely destroyed, the insurance company would not pay that amount. Well, my advice is, when renewing a policy, get the company to insert in it a replacement value and reinsure only for that amount.

The other point is, What amount ought to be deducted in making one's income-tax returns for depreciation? I do not think that the practice is uniform with all the income-tax commissioners, but I think that they are generally fair. Some might allow for replacement when a new car is purchased to replace a worn-out one, and some might allow instead of an annual amount for depreciation; in the latter case 20 to 25 per cent. would, I believe, be a fair amount for a medical man to claim who has his car in constant use and therefore deteriorating quickly. Actual repairs and cost of running, including the chauffeur's salary, if one is kept, are also allowed, but, of course, the accounts and receipts might be asked for.

PROTECTION FOR PNEUMATIC TIRES

A SUCCESSFUL EXPERIENCE WITH TIRE PROTECTION

I am now in the fourth consecutive year of my use of the automobile in my daily work, and I would not willingly exchange it for any other mode of conveyance. My single-cylinder runabout (104) has given me the fullest measure of service and satisfaction, together with no small degree of pleasure. It rarely gets out of order, and it goes fast enough and far enough for all professional and even for emergency purposes. I ride constantly with my top, as well as glass storm-shield up, winter and summer, fair weather and foul weather alike, as I find these admirable protection against wind, dust, rain, sun, cold. I have been rather fortunate of late in the matter of tires. Punctures have been happily few, and casings (185) have as a rule outlived the guaranteed mileage of 3,500 miles. I have found no economy in retreading worn casings, as it is in the fabric ratherthan the rubber that yields in the occurrence of blow-outs. I avoid skidding and side-slipping by careful driving. I estimate that I cover on an average about twenty miles a day at an outlay within $2, divided almost equally between first cost on the one hand and maintenance, including repairs, renewals, etc., on the other hand.

AUGUSTUS A. ESHNER, M.D., Philadelphia.

PROTECTION FOR PNEUMATIC TIRES

The pneumatic tire, on account of its capacity for absorbing shocks, is almost essential for use on automobiles intended to be run at even moderately high speeds. The ordinary rubber pneumatic tire, which at the present time is considered the most satisfactory, has this capacity for absorbing shocks in a high degree, but is comparatively frail and is liable to injury from several sources. Nails, glass, scrap iron, stones, etc., may puncture it, rendering it temporarily or permanently useless; or even when not piercing through so as to cause a leak, may damage the outer shoe. Objects not sharp enough to puncture or cut the tire may strain or even burst it if struck hard enough. The road has a steady wearing effect that will in time wear the tire thin enough to weaken it and cause bursting. And finally light, heat, air and sometimes oils act on the rubber, causing deterioration. It is the office of the tire-protector to shield the tire as much as possible from these injuries.

Tire protectors are of two types, those that are placed outside the tire shoe and those that are placed inside it. These last are really tube-protectors rather than tire-protectors, for they do not protect the shoe except perhaps indirectly by relieving it of some strain. Protectors of the inside type are very little used and it is a common opinion that they cause as much trouble as they prevent, for they frequently wrinkle or roll up, tearing the tube and sometimes bursting the tire shoe. Inside protectors doubtless prevent punctures to a certain extent and strengthen the shoe, preventing some blow-outs, but in order that they may be used satisfactorily tires must be blown very hard; and since the inside protectors stiffen the tire they detract somewhat from the easy riding qualities. Except for the partial protection from punctures and blow-outs, they give no protection against the injuries mentioned above.

The outside type of protector affords protection in a greater or less degree against all the injuries mentioned in the first paragraph except possibly the action of heat. These outside protectors are generally made of chrome leather studded with steel rivets. This steel-studded leather is practically puncture-proof and proof against injury from any of the sources mentioned, except the natural wear on the road. Such protectors not only protect the tire from injury but are excellent anti-skids. The use of chrome-tanned leather is almost absolutely necessary for these protectors, for leather tanned in this way does not shrink or stretch when wet, and does not rot rapidly when kept moist, as bark-tanned leather does. Chrome leather is the toughest leather that it is possible to make, and when compressed by having the steel studs riveted tightly at close intervals, it is practically proof against punctures even from nails.

When the first leather protectors were put on the market there was considerable complaint on account of their causing the tires to heat. This was owing to the fact that the leather, which is a very poor conductor of heat, held in the heat generated by the tire. This trouble has been overcome by allowing the prongs or stems of the steel rivets to pass entirely through the leather, instead of covering their inner ends; so that their clinched ends come in contact with the rubber of the tire and carry the heat to the heads, which, as they revolve through the air, throw it off rapidly. These clinched ends are made so smooth by the improved machines now used that they do not make even the slightest mark on the tires.

Another common trouble with the first protectors was the chafing of the tire. This trouble was caused by the stretching of the cover, which then became slightly larger in circumference than the tire, so that in rolling over the road it ought naturally to roll a greater distance at each revolution than the tire. The protector being held on the tire so that it could not do this, the difference in the circumference had to be made up by slipping. This took place not only with the detachable protectors held by mechanical means to the rim, but also with those vulcanized or cemented to the tire; for the portion that came in contact with the road would separate from the rubber underneath and chafe or wear it until the tire was destroyed. In the covers now commonly used, this trouble has been overcome by providing means of adjustment to tighten them when loose, and by fastening them to wires on each side instead of to the rim or tire, so that if there is any difference in circumference between the tire and cover, the cover can roll on the tire enough to make up the difference. With covers put on in this way the tire receives a slight amount of wear on the sides, but little or none on the middle or tread portion.

There is a common impression among persons who have had no experience with tire-protectors that dirt or sand will work in between the cover and the tire, causing serious damage. Such, however, is not usually the case. The dirt or loose particles between the two have a tendency to work to the sides where they can fall out; in the same way that dirt, which gets under the rubber of an old tire through cuts on the middle works to the sides and forms blisters. This is owing to the fact that there is greatest pressure at the middle and less toward each side, so that the dirt is squeezed out by pressure. If tires are run poorly inflated, they have a tendency to buckle back in the middle toward the rim where next to the road, so that the load is carried on the sides instead of the middle, and the dirt is then held in the middle between the tire and the cover. I might say here that tire-protectors will not appreciably prolong the life of a tire that is not kept at least somewhere near the proper pressure. The lowest pressure that is generally recommended for tires is fifty pounds per square inch for three-inch tires, and ten pounds more for each half inch larger than three-inch. If one does not use a pressure gauge, a good rule is to blow the tires hard enough so that a man, standing on the hub and springing up and down, can cause no perceptible movement of the tire on the ground. If the tire is not kept within at least ten or fifteen pounds of the proper pressure, the protector can not preserve it, for the excessive flattening on the road bends the walls of the tire so sharply that they are soon weakened, causing the tire to burst or blow out from weakness, rather than from outside injury.

The speed or power of a car is to a certain extent affected by the additional weight and stiffness of the protectors. The effect, however, is very slight, especially with the detachable or separate form of protector, which with the tire acts like the leaves of a spring that are much more flexible than a single piece of the same thickness.

The metal-studded leather protector, when made and applied in such a way as to avoid heating or chafing the tire, will protect it against all ordinary injuries from the outside, and if the tire is kept well inflated it will last several times as long as when run bare. When tire-protectors cost almost as much as tires, there was some question as to the economy of using them; but now, when they can be bought for about one-half the price of tire shoes, they are undoubtedly money-savers. The life of a good protector is about the same as that of a tire—3,000 to 4,000 miles—and they are generally guaranteed for at least 2,000 miles. On oyster-shell roads and flinty or stone roads that cut the rubber tires, they generally last longer than the bare tires, while on pavements or macadam roads that grind off the steel studs, the rubber tire will often give longer wear. If we consider the life of the protector as about the same as that of the tire, and that the tire will last three times as long with them as when run bare, there is great economy in using them. Even though the average life of the protectors were no more than guaranteed—2,000 miles—they would not be expensive to use if one considers protection from punctures and skidding as of any value.

C. B. WOODWORTH, Newton Upper Falls, Mass.

ANTI-SLIP DEVICES

While anti-skidding devices are to be considered as necessary at all times of the year, during the winter and spring, when there is almost constantly moisture on the roads and paving, self-protection dictates that the tires shall be shod with anti-skids that will be positive in action and resist effectually the tendency of any vehicle to slide on any wetted surface or while in mud. Of course, with snow and ice the danger is considerably increased, and in the traffic of the city, even with the engine running very slowly, control is essential to safety. All experienced motorists recognize the danger of this sudden and unforeseen "skid," which often results in damage to the car and passing vehicles or foot passengers, and often injury or even death to its occupants.

The cause of skidding is obvious. When a vehicle moving in a certain line has its direction changed, the momentum obtained tends to continue the body in its former course, at a tangent to its changing direction, and this tendency prevails until it is overcome by the friction of the contact surfaces, and the vehicle as a whole progresses in its new course. The greater the weight and speed of the moving body, and its consequent increase of momentum, and the more slippery the surface traversed, the greater will naturally be the slip or "skid."

In the early days of the automobile, when the construction was light and the speed limited, this problem did not present itself with any force. But the increase in weight and speed of motor vehicles, and the consequent liability of skidding with its attendant dangers, made this feature a live issue in motorism.

To meet the emergency, all kinds of contrivances and devices have been suggested and employed. One of the earliest methods adopted was to wind the tires with hempen rope; but this at best was only a makeshift, and the perishable nature of the covering quickly placed it in the class of the impossible. Coil chain was next substituted in like manner, but this material developed the insuperable objections of injury to tires and the marring of paint on rims and spokes.

Since these early efforts, the problem has been approached on practical and scientific lines, resulting in the production of numerous devices, most of which have had their short hour and been forgotten. Those now recognized as practical and efficient can be enumerated on the fingers of one hand.

For the purpose of consideration, anti-skids may be divided into two classes—detachable and non-detachable. Detachable non-skids comprise those which can be applied when conditions demand and removed when the need is past. Non-detachable are those which are made a component part of the tire or the attachment and removal of which is a business so difficult and tedious that they are in effect permanent appliances. Disregarding efficiency and service, detachable non-skids appear to have a distinct advantage, as their removal when not required is an important consideration from the standpoint of economy in wear and loss of power.

Of the permanent non-skids, among the most common are those formed by metal studs incorporated in the tread of the tire as a constituent part of the tire; others are made by facing the tread of the tire circumferentially with a leather band studded with rivets. A less form of the same type is the tire with rubber studs on the tread. This kind of non-skid is most generally used on the Continent, where many cities require the use of a non-skid at all times.

A non-skid tire on a similar principle was constructed by moulding into the tread coils made of piano wire, permitting parts of the coil to project above the tread. Thus a rough tire face was presented to the road surface, and when the coils wore through a vast number of wire points succeeded to the coils.

Another type of non-skid consists of a metal-studded leather cover which fits completely over the tire, thus accomplishing the double purpose of a tire-protector and non-skid. While non-skids of this class are capable of being removed, the difficulty of their removal or attachment and the time required would exclude them from the detachables, in the strict interpretation of the term.

All the non-detachables described above have been elaborated in minor details, producing a large number of devices of similar construction. But the main features remain the same and are fairly typical of their kind.

There are several salient features of an ideal anti-skid. There is an obvious loss in the use of a device when conditions do not require it. For this reason permanent non-skids are at a distinct disadvantage as compared with the detachable type. Again, the ideal anti-skid must be effective in all weathers and under all conditions of road surface. In this respect it would seem that the average non-detachable type fails to meet all the requirements. While metal studs may afford a reasonable degree of traction and prevention of skidding on wet pavement, I believe that the consensus of opinion is that in mud or snow satisfactory service is not obtained from them.

For the above reasons the detachable type of non-skidding device would seem to come more closely to fulfilling the requirements under all conditions. Take, for example, the well-known tire chain. The attachment or removal of these chains is a matter of seconds only, which permits of easy and rapid appliance when even a sudden emergency demands, and an even quicker removal when conditions do not demand their use. Being flexible, they occupy only a small space in the tool-box, and can be carried as a part of the regular equipment of the car, ready for immediate use. Furthermore, experience has shown that they afford ample traction in mud or snow, and are efficient in preventing skidding under all conditions of road surface. A distinctive feature of this device is that it is loosely attached, so as to permit it to creep circumferentially over the tire, thus eliminating any possibility of injury to the tire, which would be certain if the chain were anchored so that the cross members always engaged the tire at the same point.

An anti-skidding medium of some sort has come to be recognized as a necessary accessory. A driver endowed with great skill and experience may to a certain extent minimize the possibility, but can not absolutely prevent the sudden and unforeseen "skid," which bears so many attendant dangers. As a matter of safety, as a relief to the strain on nerves and muscles, as a safeguard against damage and danger, the anti-skid is being more and more appreciated by those whose pleasure or business throws on them the responsibility of the safe guidance of the car with its occupants.

W. M. WHEELER, New York.

My machine (164) is too light for bad country roads, but is ideal for city. Its very lightness guarantees the minimum expense for tire, oil and gasoline. In exact tests I have ascertained that I get about nineteen miles out of one gallon of gasoline while using my machine in my daily work, which means slowing down at every street corner, and a stop practically within every mile. My total expenses for tires have been $16.50, retreading of two tires $14, patching of one, $2.50. HUGO EHRENFEST, M.D., St. Louis.

THE AUTO IN WINTER AND THE COOLING PROBLEM

AUTOING AT 32 BELOW ZERO IN THE FAR NORTH

I am an auto enthusiast of the extreme degree. I deeply regret that my advent as a physician antedated the perfection of the auto by more than twenty years. I regard the auto as the ideal means of transportation for our profession. I can not understand how any physician, with reasonably good streets and roads can be willing or can even afford to be without one. It not only saves time in both city and country practice, but converts a tedious country call into a pleasure excursion. Of course, it has its limitations and will not do the impossible. Too much mud or snow put it out of commission for a time.

Eleven years ago I sold my horse and have since depended almost entirely on the auto (165). I would not willingly be without one for many times its cost or maintenance. Although North Dakota has a rigorous climate, I only laid up the machine three days last winter, and not at all so far this season. As an example of its capabilities is this: Last summer, in answer to a call from some thirty odd miles in the country, I left home at 5 p. m., saw the patient, had supper at a country hotel, and was home at 10 p. m., and the

Fig. 32.—A winter ride with fur robes and anti-slip chains. Car (130) of Dr. George Kessel, Cresco, Iowa.

friend who accompanied me voted it a most agreeable outing. This trip was not made with a high-priced powerful roadster, but with a single cylinder runabout (103), costing but $600. The odometer showed sixty-nine miles for the trip. Compare this with the same trip by hay motor.

Last summer in Minneapolis I received a two-cylinder touring car (184) with a capacity for five passengers. I drove it to my old home in the southern part of the state, visited three or four days, and drove it to my North Dakota home, bringing two friends with me. The odometer showed in that week 776 miles, and the only adjustment made was the cutting down of the lubricating oil-feed. It has since been an unalloyed pleasure for evening drives. I have now ordered a two-cylinder roadster of the same make and chassis with rumble seat and box of good carrying capacity under the rumble. This is my conception of an ideal car for our use.

A pet cock in the cylinder head and a half-pint squirt-can of commercial ether are a good combination for cold weather starting, but below 20 below zero this will fail, and I have fitted a two-way cock on my auto gas-lighting tank and have it piped so that, at will, I can turn the gas into my intake pipe just above the carburetor, which always insures an explosion at the first throw. During our recent cold snap my car stood on the street from 1 to 6 p. m., with the thermometer at 32 below, and the engine was so stiff that I could hardly turn it over, but it was "off" at the first turn. Of course, the gas is used only for a few moments until the engine is warmed up.

H. M. Wheeler, M.D., Grand Forks, N. D.

CARE AND RUNNING OF AUTOMOBILES IN WINTER

There is little use trying to run an automobile in a country that has normally a considerable snowfall and cold weather, and, consequently, much bad roads. Although there are times when one could drive his machine with fair comfort in the winter season, it would be at his peril and at the peril of his machine. Weather, hot or cold, however, makes no difference in the running of an automobile in itself. The difference is in the condition of the roads, the comfort of the driver, the wear and tear on the machine. Contrary to my preconceived notion, I find that frosty and icy roads are not as injurious to tires as the hot dry roads of summer.

The only thing that needs special attention in cold weather is the water in the cooling system. Eternal vigilance is the price of safety here. I am one of the many who have paid the price to learn this lesson. Now I commence early, before cold weather, the use of an anti-freezing mixture composed of one gallon of denatured alcohol and four gallons of water. The strength of this solution is increased, as the cold weather increases, to one gallon of alcohol and two of water. This proportion is sufficient to resist any weather in which any man would care to drive. Formerly I used a solution of calcium chlorid, which is excellent, but I am sure that it is injurious to the metal of the radiator and engine. One thing to remember about this mixture is, always to be sure that the proportion of the ingredients used is kept at the same percentage, especially the alcohol mixture. Alcohol, being of lighter specific gravity, will evaporate before the water. Therefore, alcohol must be added to the old mixture from time to time to keep up the proper strength. This must always be done if the water has been overheated during a hard day's run.

Every beginner will soon learn that an engine that has stood over night in the cold is very hard to start in the morning. A little trick that will make a wonderful saving of muscle and temper is to take any piece of clean, soft cloth or sponge, soak it in gasoline and hold it to the air intake of the carburetor. You will be surprised how quickly the engine will be running at full speed.

So now I think that the best place for my automobile (130), in this changeable and often inclement climate of northern Iowa, is in a snug corner of a good, dry machine shed from January 1 to April 1. Put it in on four solid blocks and take off the tires and lay them away in a warm, dry place. In the meantime, polish off the rims of the wheels thoroughly and give them a coat of shellac. This will make them smooth and free from rust, so that they will not injure the tires when they are replaced in the spring. If you are not sure that you can drain every drop of water from the radiator, remove it and let it keep company with the tires in the same warm, dry place. In the spring test it under pressure, and if any leak is found, send it to the factory for repairs, or buy a new one. It will be cheaper than to have a tinsmith or the man in the so-called automobile shop try to repair it. This lesson I have also learned, and for this also I have paid the price.

One more thing there is to be remembered: Along with the coming of the automobile there has come a horde of pretenders who call themselves automobile repairers, whose chief asset is the large sign hanging from a small shop far out into the street, "Automobiles Repaired." If you should have a leaky spark-plug weakening the power of your engine, and should drive your machine into one of these shops, five

times out of six the man under the sign would persuade you that the engine was "busted," or put in "wrong end to," and would immediately proceed to give the manufacturer a lesson in automobile building. The procedure usually lasts three to five days at 50 cents per hour, by which time you would also have a lesson. This lesson one learns sooner or later, unless one is willing to take somebody else's advice, viz.: To take one's machine only to the fellow who has had actual training and experience in an automobile factory. Anyway, always remember the aphorism of Josh Billings, "It's better not to know so much than to know so many things that ain't so." This may hit the writer of this article, but that can't be helped.

GEORGE KESSEL, M.D., Cresco, Iowa.

WATER COOLING VS. AIR COOLING

Over 90 per cent. of automobiles manufactured are of the water-cooled type. The majority of people seem to have unjustified prejudice against the air-cooled type, due to the failure of the first air-cooled machines, a considerable number of which were marketed throughout the country, and so strong has this prejudice become that the later air-cooled cars have been given but slight attention in spite of their very successful performances.

Recent endurance contests have shown that air-cooling is not only successful but that air-cooled cars will stand more low gear work—such as running through deep sand and mud without distress from overheating—than the water-cooled cars.

Advocates of the air-cooled motor assert that it is an indisputable fact that the air-cooled motor is more efficient than the water-cooled type. The only successful cylinder design for the air-cooled motor is the type with both valves in the head and any engineer will admit that this location of the valves gives the highest efficiency in any motor, but there is another reason for the higher efficiency of the air-cooled motor, namely, the higher working temperatures of the cylinder walls.

The hotter the cylinder walls can be kept without destroying the lubrication the more efficient the motor. As the temperature of the water in the jacket of a water-cooled motor must be below 212 degrees F. to avoid boiling it will be readily seen that the cylinder walls of a water-cooled motor must be kept at a much lower temperature than is required to protect the lubrication, which of course is a loss in efficiency. Almost all of the good cylinder oils on the market to-day will stand a temperature of 400 degrees F. without distress.

It has been proved by actual test that the air-cooled motor will give from 10 to 15 per cent. more mileage on the same amount of fuel than the water-cooled motor.

In the hands of the novice, the water-cooled motor will give the better satisfaction as it will stand more abuse and is not so sensitive to adjustments as the air-cooled, yet those who have driven a good air-cooled car and become familiar with it favor it very much and could not be induced to exchange for the water-cooled type with its many additional complications.

It would seem that the high-grade air-cooled runabout would be the ideal car for the physician's use, as he would have no worry from freezing in cold weather, no leaky water pipes or radiator troubles, and the operating expenses would be less.

The water-cooled motor should be quieter than the air-cooled from the very nature of its construction, i. e., the jacket of water surrounding the cylinders and valve pockets forms a deadening cushion for the noises developed by the moving parts and especially by the seating of the valves, yet many well-known water-cooled motors are more noisy than the best air-cooled ones.

The trend of automobile design is toward simplicity and here the air-cooled motor excels on account of its minimum complications.

In my opinion the future automobile motor will be air-cooled, using alcohol as a fuel.

A. N. MANROSS, New Britain, Conn.

DELIVERS THE DOCTOR FROM SLAVERY

I read the past automobile numbers of THE JOURNAL with much interest and although I had a somewhat disastrous experience with a second-hand machine (134) in 1905 and 1906, the articles printed influenced me to try it again.

I bought a gasoline runabout (135), March 25, 1908, and ran it practically continuously from then until Jan. 1, 1909, registering 5,718 miles. During this time I used horses only eight times. A summary of my experience is as follows: I used 310 gallons of gasoline for power and cleaning, 25 gallons of lubricating oil, 4 cans of transmission oil, a part of a can of hard oil, and three new tires, which are almost unmarked as yet. I spent 60 cents for new parts which the blacksmith could not make; about $10 for blacksmith and outside help; $3.75 for charging the storage battery, and $7.40 for dry cells. I lock my machine over very carefully at least once a week, and oftener if running up big mileage. I have never broken down, failed to make my trip on time, or been delayed over twenty minutes on the road.

I consider that my automobile has been a great success, due in the first place to good construction, and in the second place to the careful watch kept over adjustments, loose parts, and mainly, lubrication. The auto has changed the drudgery of my drives into pleasure and has extracted the sting of night drives. I get back in time to have a good sleep, whereas, with horses, the whole night would be gone.

Fig. 33.—Bucking a snowdrift.

It cuts the bonds of the country physician, allowing him to refresh himself with a visit to professional brothers in neighboring towns without neglecting business, as an hour or less will get him back home on a telephone call. In a region of good roads the automobile is the only logical mode of transportation, for economical reasons as well as pleasure. All hail the automobile as the deliverer of the doctor from slavery.

H. S. WILLSON, M.D., Crystal, N. Dak.

I have been running every day for three months a two-cylinder runabout (169) and "it's all to the good." The material, construction and workmanship are substantial and reliable. For the price, $750, I consider it the best automobile value I have seen and an ideal doctor's car. Its cost of maintenance is very little, if at all, more than that of a horse. I keep it in a large garage under the constant supervision of skilled mechanics and engineers. Its appearance also has been greatly admired by every one. But, of course, it is an automobile, and in common with all machines demands constant, intelligent care and vigilance with its hundred and one little details and points to be kept in order to avoid embarrassment and delay. Still, it is so vastly superior to horses that it pays to do it.

JONATHAN T. MCDONALD, M.D., Honolulu, Hawaii.

THE MANUFACTURERS' CHARGES FOR REPAIR PARTS

CHEAPER REPAIRS—THE FOREMOST NEED

At the risk of being thought pessimistic, I am going to assume the rôle of fault-finder. The commercial relations between the automobile manufacturer and the consumer could be improved, I think, in many ways in the interests of both, especially the latter. Consider the chief items of expense in the maintenance of a car; tires, accessories and new parts that are frequently required to replace worn-out or broken ones. These expenditures may be classed as incidentals, but the constant drain on one's income decides the true position of the machine in reference to the physician.

I have never purchased a new part for a gear or an engine that did not cost nearly twice as much as the same article could be made for at any good machine shop, if such a shop was only accessible. New parts for the best foreign cars cost about 60 per cent. of the charges for the same parts belonging to domestic cars. In this respect American manufacturers have not kept good faith with the public.

If prospective purchasers would always insist on a price list of the separate parts of a car, together with the descriptive circular of the machine, I am sure many makers would greatly modify their lists and help in a measure to right this evil. The same may be said of the cost of accessories—anything for an auto, it seems, must have an unreasonable value. A casting for a stove will cost 30 cents, while practically the same thing for an automobile must cost $6 or $8. The people know these things and resent the injustice, but as yet are powerless to prevent it. The organization of automobile clubs, which promised great things, has made a failure of this entirely.

This is easy to understand, because they are controlled by the producers. The same may be said of the auto journals. There is not an automobile paper published to-day that is not printed entirely in the interests of the dealers. It seems to me that this suggests the solution of the problem.

It has often occurred to me that we have the opportunity to assist ourselves in a united defense against this, which is practically the only, menace to the automobile consumer. For instance, a new instrument, which is perhaps only a slight modification of one used for fifty years, and no better, will receive a long description in medical journals; similarly, a new preparation of a drug, which is more palatable, finds ready notice. There is no instrument or class of drugs that can compare with the automobile in the service rendered sick people, yet we have to wait a year or perhaps two to have something published in the interest of the users of the automobile.

I have often thought that an automobile department of THE JOURNAL of the American Medical Association, with a competent editor, would be the most valuable adjunct to THE JOURNAL we have ever had. We need not stop at this. A subsidiary society could be formed with yearly dues of perhaps $5 for membership, which would control the largest supply house in Chicago, with branches in New York, Philadelphia, San Francisco and other places, where its members could obtain supplies at nearly wholesale rates. This sounds like a "pipe dream," but it is not; it is intensely practical. With a membership of 50,000, with perhaps 20,000 using machines, and many more wanting to use them, all that is lacking is the organization.

Let a pharmaceutical house abuse its privileges with the profession and see how quickly it will be called to an accounting by medical journals. Why should this class of producers enjoy so great immunity?

A local board of directors elected or appointed could easily manage affairs, and great possibilities are open.

Many high-grade manufacturers would be glad to cater to such a market. It is estimated that at least 40 per cent. of the proceeds of manufactured products go for agents' commissions and advertising. If a consumers' organization took charge of the manufactured products it would mean that we could buy a $1,500 car for $1,000. Two or three types of cars could be decided on as most fitting a physician's use. Say a small runabout, a larger car with roadster or touring body, and one of the limousine type. If one is in doubt as to the market, advertise a few new high-grade cars at two-thirds of the market valuation, and see how long it will take to dispose of them.

Of course, it would take some time to elaborate this on such an extensive scale, but there is no doubt that we will eventually require some organized body within the automobile consumers.

W. W. BEVERIDGE, M.D., Asbury Park, N. J. (197).

THE PERFECTED TWO-CYCLE ENGINE

TWO-CYCLE AS COMPARED TO FOUR-CYCLE

The primary requisite in an automobile engine for pleasure cars is ability to give the smoothest possible running to the car at all speeds and road conditions, with the minimum of noise and vibration and the maximum of power; and to this requirement for an engine for commercial use may be added reliability, low maintenance and durability.

The smooth running can be obtained satisfactorily by many light impulses in a four-cycle engine only when built with six cylinders and, in a moderate degree, for light cars and low horse-power engine with four cylinders. Experience has shown that the life of every part of the mechanism of a car, including tires, is greatly prolonged by a multiplicity of light engine impulses which gives an even unbroken application of power.

In all four-cycle engines an impulse is imparted to each piston only at every second revolution of the crank-shaft. This gives one stroke which absorbs power instead of imparting it and requires the multiplicity of poppet valves and their complicated mechanism necessary for their timing and operation. The noise of the four-cycle engine is caused by the pounding of the valves, the rocker arms, the cams and the loose bearings.

Even in the best types of four-cycle engines these parts are always noisy and unsatisfactory, with great liability of leaking, sticking, breaking and of improper timing, and in all four-cycle engines are subject to rapid deterioration due to their working under intense heat. Engine troubles are largely due to the lack of adjustment and condition of these parts and the renewal of them is largely responsible for the high maintenance cost of the ordinary four-cycle engine.

The principal advantage of a two-cycle engine over a four-cycle engine is its ability to give the necessary power impulses with one-half the number of cylinders. In a two-cycle engine an impulse is imparted to each piston at every revolution of the crank-shaft and this is accomplished without the employment of any valves and their accompanying complicated mechanism.

In the past practically all two-cycle engines for automobiles have been adaptations of the old-fashioned marine or stationary engines with their crude and imperfect principles and construction and two-cycle engines are often condemned in general terms by those ignorant of the perfected two-cycle engines used to-day in automobiles which engines have been designed, developed and perfected solely for automobile use.

There are two types of two-cycle automobile engines, known as the three-port and two-port systems, in both of which the charge is taken into the crank-case and then transferred by pressure to the explosion chamber instead of being sucked directly into the explosion chamber, as in the case of the four-cycle engines.

The three-port system is a development of the old-style marine or stationary engine adapted to automobiles. In it the carburetor connects with the crank-case through a port which is opened and closed by the piston at the end of the stroke—the suction stroke being completed and the maximum vacuum formed with no carburetor connection—the port at this point is opened and the charge rushes in.

Engines of the two-port system were designed originally for automobiles. In this system the carburetor is connected direct with the crank-case and the suction acts on it during the entire up-stroke of the piston, giving the same action on the carburetor as in a multiple-cylinder four-cycle engine. The crank-case compression of the charge in both systems is made by the down-stroke of the piston and the pressure in the three-port system is usually about three pounds while in the two-port system it is from eight pounds up, varying with different manufacturers.

The greater compression gives a more positive transfer of the charge and less mixing of the old and new charges, giving greater efficiency and allowing of a wider variation of engine speed so necessary for a perfect running automobile engine.

The two-cycle engine, receiving an impulse with every upward stroke of the piston, gives the necessary multiple impulses to obtain the smooth running with one-half the number of cylinders—is absolutely quiet, all valves, rocker arms, cams, etc., being eliminated and has a maximum amount of power with minimum of weight and space occupied.

A perfected two-cycle engine is practically indestructible, as the only wearing parts are the pistons, rings and cylinders and, with the offset crank-shaft, the wear on these is extremely light.

Experience has shown that the depreciation of a four-cycle engine is in excess of 25 per cent. per year while judging by the facts obtainable on the perfected two-cycle engine the depreciation is reduced to the remarkably low rate of 5 per cent. per year.

Other advantages of the two-cycle engine over the four-cycle are the absence of valves or chambers opening into the combustion chamber with their exposed surfaces, which absorb the heat and pressure from the charge and materially decrease the efficiency of the four-cycle engine; also the absence of carbonization of the two-cycle, there being no carbonization except at the exhaust ports which are easily cleaned.

When spark and carburetor are properly adjusted the two-cycle engine will run without missing at a much slower speed than any other type of engine and will outspeed any other type, being capable of over 2,500 revolutions a minute, giving maximum flexibility and variable car speed on high gear.

It is not as easily stalled at low speeds as a four-cycle engine, as the transfer of the charge into the cylinders and around the igniter plug is as positive at lowest speed as it is at higher speed—in fact, the engine speed has no effect on the velocity of the charge to the cylinder as it does in a four-cycle engine.

Extreme simplicity, lack of adjustable parts, low compression and ease of cranking make it an easy engine for a woman or person of little experience to handle.

The desirable features of a good four-cycle engine are possessed by a good two-cycle engine in an equal or greater degree.

The relative merits of the two-cycle and four-cycle engines may be summed up as follows:

AUTOMOBILE ENGINES

TWO-CYCLE	FOUR-CYCLE
Cylinders	
One cylinder does the work of two four-cycle cylinders.	Six cylinders necessary to give the smoothest running.
Space and Weight	
Gives maximum power for space and weight. Absolutely essential for taxi-cabs.	Requires twice the cylinders, practically twice the weight and space for same power as a two-cycle engine.
Power Strokes	
Piston receives impulse with each up stroke.	Piston receives impulse every second stroke, giving a useless stroke which absorbs power instead of imparting it.
Poppet Valves	
Has none.	Has a mass of them, number depending on the type and manufacture.
Valve Grinding	
None.	Semi-monthly after a few thousand miles' running.
Valve Shafts, Adjustable Bearings, Cams, Springs, Rocker Shafts, Etc.	
Has none.	Inherent to the four-cycle engine and necessary to set and time the valves properly. Noisy, leaking, sticking, breaking, improper timing and rapid deterioration due to excess of heat.
Noise	
Has no outside moving parts; hence the quietest engine built.	The noise of the four-cycle caused by valve pounding, rocker arms and cams.
Starting	
Low compression. Easy starting.	High compression. Hard cranking.
Flexibility	
Can be throttled lower than any other type of engine without missing. Engine speeds also fastest.	To obtain low car speeds, change gears resorted to. High speed of car dependent on large cylinders.
Simplicity	
Five moving parts.	Eighty to 120 moving parts.
Reliability	
Absence of parts. No adjustments necessary or possible.	Multiplicity of parts. Always requiring attention.
Maintenance	
Minimum. Engine parts replacements unknown.	Maximum. Replacements constant. The expense cumulative, increasing rapidly in proportion to number of miles run.
Indestructibility	
Practically indestructible. Depreciation not 5 per cent. per year.	Rapid deterioration. Experience showing 25 per cent. depreciation per year.

WALTER G. MORSE, Springfield, Mass.

THE PHYSICIAN'S SOLILOQUY

To buy or not to buy, that is the question.
Whether 'tis safer with a horse and buggy
To dodge the autos that infest our highways,
Or to provide oneself with one's own auto
And keep the others dodging. To ride—to scorch—
No joke—if by a scorch we think we end
The curryings and the thousand daily chores
The driver's heir to. 'Tis a consummation
Devoutly to be wished. To ride, to glide;
To glide; perchance to bump; ay, there's the rub,
For in that fatal bump what aches may come
Ere we have shuffled off this mortal tire
Must give us pause. There's the respect
That makes calamity of so long rides;
For who would bear the toots that rend our ears,
The scorcher's jeers; the autoist's recklessness,
The stench of gasoline, the clouds of dust,
The insolence of chauffeur as he spurts
His fiendish engine at unlawful speed,
When he himself might his quietus make
With bursted tire? Who would not goggles wear,
Rather than dodge a buggy in and out
In dread of scorching car? The task to find
That undiscovered country in whose bourne
No screeching auto runs—puzzles us all.

JOHN B. TODD, M.D., Syracuse, N. Y.

DO NOT EXPECT TOO MUCH OF YOUR CAR

A SOBER SURVEY OF PROBABILITIES

For the past four years, I have been using automobiles in my practice and have kept an accurate account of every dollar spent, every gallon of oil and gasoline used and every mile covered. It has been a rather expensive experience. Do not be fooled by interested parties, who assert that you can run thousands of miles, on a few dollars, without repairs, at the rate of twenty-five miles to a gallon of gasoline and such other rot. Experiences of this sort are exceptional and must not be taken as the rule.

My first venture was a second-hand runabout (111) of the vintage of 1903, a veritable nightmare. This car I used twenty-one months at a cost of $850. For this I received only 6,000 miles, about 15 cents per mile. The trouble with that car was inaccessibility of parts. Every time anything broke or needed replacing in the engine or transmission, the body had to come off. This happened nearly every month, so a repair bill of $50 was common. I finally sold it. No more single-cylinders under the body for me.

My second and present car is a four-cylinder runabout (112). This car has cost, with equipment, $1,450, for nineteen months, $1,100 for the car and accessories and $350 running expenses; for this I have received 7,500 miles. Counting its present value $600, it has cost 12 cents per mile. The running expense per month was about $10 for gasoline, oil and batteries, $5 for tires and $3 for repairs, etc. This next season the repair bill will be greater, as all parts broken will have to be paid for, the guaranty having now expired. The depreciation, however, will be much less. This car averages fourteen miles to a gallon of gasoline.

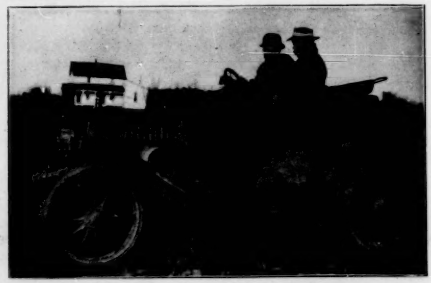


Fig. 34.—Dr. A. H. Calhoun, Wren, Ohio, at the wheel. His article is on page 817. (Auto 110.)

Do not pay a big price for a car. Even at the reduced price for accessories, $200, besides the cost of the car, will hardly buy what is needed. By the end of one year the outfit will bring only 50 per cent. of its cost. The best plan is to run it two or three years, then sell and get the latest improvements. Almost any car will last three seasons, and the expensive car will bring very little by then. The ideal car for a city doctor should have four cylinders, solid tires, short wheel base and a big powerful engine. Four cylinders are needed to give power; a short wheel base is so much easier to handle and turn and an engine giving one horse-power to fifty pounds' weight is not too much in power.

A big engine does not have to be cleaned out or have valves ground so often, and if it is developing only one-half its power, it would still do as well as many of the present cars. Do not worry about the extra gasoline and oil used; that is only a small matter. Many times on a muddy road or steep hill, or when running through snow, you would give a five-dollar bill for more power. Cars should not weigh more than 1,200 pounds, so that they can be easily pushed, and also to keep down tire expense.

The air-cooled engine is a great thing. The trouble with the present air-cooled cars is that the engine is too weak. On a long hill it loses power from the overheating. If the air-cooled engine was more powerful for the load carried, it could lose some of its power on hills without falling behind. I notice one company has the right idea: a twenty-four horse-power, air-cooled motor for 1,200 pounds of car (113).

In buying an automobile, look out for a light car, big engine, air-cooled, magneto, a large, roomy, one-piece seat, room for three, dashboard adjustable, carburetor with priming device, folding hood, hooded dash to protect the coil from rain, full elliptical springs (single ones will break), a hand-brake which will lock the rear wheels, a long running board and a fully protected body and engine.

Do not give up your horse for two or three years yet, unless you have fair roads, are near to a good repair shop, or are mechanically inclined and do not mind soiling your hands and linen.

FREDERICK YATES, M.D.,
Washington, D. C.

THE IMPORTANCE OF BATTERIES

I first bought a high-wheeled air-cooled automobile (149). My experience was disastrous and every mile that I ran cost me one dollar. After disposing of this machine I bought a four-cylinder runabout (150) with an engine rated at fifteen to eighteen horse-power. The summer of 1908 was exceptionally wet and when the roads were not in condition of bottomless mud they were so rough that my pneumatic tires were unfit for further use without protection or retreading at the end of my first 500 miles.

I was discouraged and plainly saw myself bankrupt if I tried to use pneumatic tires under these conditions. With but little faith in their efficiency I sent for tire-protectors (151). These I put on over my worn-out tires and have used them without tire trouble since. In fact, the old tires have never been deflated. The crimped wire spring of these protectors keeps the protector tight and always in place. I have used these for the roughest kind of work and they show practically no wear.

Even after solving the tire question I expected more or less trouble with my machine. In this I have been happily disappointed. I learned early that to keep my machine running smoothly I must always have a strong, well-charged battery. This was of vital importance; before learning this I condemned my auto for many things for which it was not responsible.

With a strong battery, circulating water, and with plenty of oil and gasoline in my tanks I really had no trouble.

I broke a front spring one night while on a hurry-up call, but this is the only break that I had during the year, and not one day was I laid up for repairs.

My operating cost, covering everything, was less than $50 for over 2,000 miles that I ran it. It could have been much less, but I had a gasoline leak that I was unable to control and I used one-third more gasoline than I should have used. I have run fifteen miles to the gallon, but my average for the season was about ten miles.

My battery consumption was heavy, also, and expensive, as I was always obliged to send my storage battery away for recharging and so had express charges both ways.

A set of dry cells would not run my four-cylinder engine a day, and my storage battery ran it on an average about 500 miles.

I think if I were to buy a new machine to-day I would consider the factor of battery consumption, which is so heavy in a four-cylinder machine, and select one of only two cylinders. In fact, from my observation, I believe that a powerful two-cylinder engine gives better results than an engine with four small cylinders.

There were several things that I learned, among which were the following:

1. An automobile is no good in mud or snow.

2. Most automobiles are rated too high as to power. Only under the best conditions could I get the power from my engine that I had reason to expect.

3. A standard make machine is as nearly perfect as any mechanical device can be. Repair bills and engine troubles were not among my experiences.

4. An automobile is a practical time-saving affair under any half-way decent road conditions.

Mine has been a pleasant experience, and, although I am not wholly satisfied with the machine that I now have, in all of my use of it it has always been ready to go, and now it is in about as good condition for its second season as when new.

The time saved with an automobile to a busy man is a great factor, and the pleasure which one has in using a good machine cannot be measured.

To a prospective buyer I would say, Do not experiment, but buy a standard time-tested machine. Buy a machine with a powerful engine. Do not try air-cooled engines and friction drives until they prove better than they have to date. I have come to a definite conclusion as to the machine (152) which I would buy if I were to get a new one now.

Automobiles are practical, and if one has a standard machine the cost for up-keep and repairs will be very low and when it is not in use is of no expense to the owner.

My running expense was about 2½ cents per mile. This is much higher than I would expect in a two-cylinder machine.

MERTON FIELD, M.D., Minnesota Lake, Minn.

IN FAVOR OF A LARGE HEAVY CAR

The practical car will be sufficiently large and heavy to enable the driver to maintain a steady position in the road when a moderate speed—for instance, twenty-five to thirty miles* per hour—is desired. This can not be done with a small car, lightly constructed and with short wheel base. I should place the minimum weight at 1,800 pounds, maximum 2,500 pounds, minimum wheel base 100 inches.

The motor should be at least twenty-five, and need not exceed thirty-five horse-power, as each increasing horse-power above the necessary, increases proportionately the amount of fuel consumed in operation.

The ease with which a car is operated depends on its flexibility, that is, the ability of the operator to increase or decrease the speed sufficiently for most driving purposes, without changing gear. This depends mainly on the transmission, which should be of the selective sliding gear type. The clutch also is an important factor. When of the multiple disc type it requires no adjusting, and when run in a bath of oil it will not wear out. Three speeds forward and reverse are important, making it unnecessary to race the motor in order to pass from low to high speed in starting the car.

Very little need be said regarding the construction of the car, apart from the advisability of simplicity of design and strength of individual parts.

Mere extravagance in automobile buying is a thing of the past. The physician does not care to pay more for a car than is really necessary to secure service, speed, hill-climbing ability, comfort and endurance. Neither can he afford to waste money on a cheap and unreliable car that will bring him only trouble and lack of confidence in cars in general. One can get a car such as described in the foregoing, well-equipped, for from $1,500 to $2,000. An attempt to purchase a car for constant service at much less, at the present prices of cars, will be at the expense of troubles and monthly garage bills. If you pay more than this you simply do not get any additional returns for the extra money.

The physician who has a good car and any mechanical ability at all, can drive and care for his own car, get a great deal of pleasure and recreation at a small expense and with a small expenditure of time, saving almost the first cost of the car in a year's time, not to mention the three or four hours gained each day for business that would be spent driving a horse and buggy to accomplish the same amount of work. The item of time alone for the busy physician will more than pay for the car during its life.

I have driven my present automobile (119) exclusively in my practice, giving it constant daily service in all kinds of weather, mud, snow and frozen roads for four months, having covered almost 5,000 miles during this time, at a total expense of operation of $47.62.

F. W. SHELTON, M.D., Independence, Kan.

AUTOMOBILE EDITOR'S NOTE:—If our friend gets "pinched," will he dare tell the judge he thinks thirty miles is a moderate speed?

CHOOSE MACHINE ACCORDING TO THE WORK IT MUST DO

The first automobile number of THE JOURNAL helped me to become infected with the auto fever, and for a whole month I utilized my spare time in studying a high-wheeled catalogue. A salesman, however, talked me into buying a runabout (148), whose only disadvantage, I find, is occasionally a difficulty of cranking. With my two years' experience in running this auto I feel pleased that I did not invest in the high-wheeled machine.

I am sometimes asked by a physician as to my preference for low or high power. Well, that depends on the roads to be traveled. West, south and north of me is level country, over

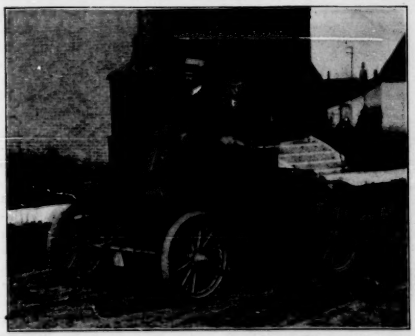


Fig. 35.—Dr. Daniel Conboy, Bad Axe, Mich., in his golden-wheeled chariot (148).

which my ten horse-power machine can travel about as fast as the strongest and dearest—at any rate, as fast as I want to go—and with less expense to tires and machinery on account of its lightness. East of me, however, is hilly country, over which I can make as good speed with the horse as with the automobile and at less expense and with more assurance of getting there and back. My runabout is a good hill climber, but it must climb nearly always on slow speed. Hence, if a man has level country about him and good roads a light one-cylinder, low-priced runabout is equal to the task, but if he has hills, or even undulating country, he will always meet trouble unless he has at least fourteen or eighteen horse-power, and that means two or more cylinders. The method of propulsion must likewise be considered. A chain-driven requires a lower horse-power than a shaft-driven machine.

Tires cost comparatively very little in original expense and in up-keep in a runabout. In a touring or large car rubber expenses run high. After two years' use my machine is yet good, and I think I can run it three years more by not abusing it. The average life of this machine, I find by observation of other possessors of the same vehicle, is about five years. I have never been hauled home, but have pulled a large car and its load apparently without difficulty, but, of course, at slow speed.

DANIEL CONBOY, M.D., Bad Axe, Mich.

SOME PRACTICAL SUGGESTIONS ON TIRES AND ENGINES

SOLID TIRES AND SPRINGS

While pneumatic tires have been improved at least a third and have been reduced in price 20 per cent., still the greatest of all objections encountered by the physician who does country practice with an automobile comes from failure of pneumatic tires to hold air. Nothing is more exasperating. When a delay due to a flat tire has once been experienced, the dread of it in the future transforms pleasant anticipation of a trip into anxiety and fear of trouble.

To me it is absolutely unbearable. Therefore I have had solid rubber tires put on my wheels and spiral supplementary springs placed at the ends of my elliptic automobile springs. The increased resiliency afforded by the altered springs makes up for the difference between pneumatic tires and solid tires, and the net result is that I have entirely eliminated tire troubles, with all the worry and forebodings of disaster which pneumatic tires carry with them.

Improvements in construction have produced dependable products during the past year which make the self-propelled vehicle more useful to the physician than ever before. A uniform standard is gradually being approached by all manufacturers, a composite of the good features which have stood the rigid test of time and varied conditions, and now the physician who wishes to secure the ideal advantages of quick transportation to and from his patient's bedside can use the automobile with much more satisfactory results than heretofore. The single-cylinder motor, which is compelled to store up propelling force from one explosion to another by means of a cumbersome fly-wheel, is almost extinct. The two-cylinder horizontal engine, which is a compromise between the evils of the single cylinder and the steady pull of the ideal engine, is also going out of use. Six cylinders seem to be an extreme not to be desired, and the happy mean seems to be the four-cylinder motor with its power impulse every half-revolution of the crank-shaft, which has proved so effective in steam-engine design. The upright cylinder affords important mechanical advantages which add to the efficacy of the four-cylinder engine. The pistons move in a path opposite to the progress of the car, that is, vertical piston movement with horizontal car movement, and this corresponds better with undisturbed power application. The pistons wear more evenly, the lubrication is more positive, the piston rings remain in more correct relation to compression, and accessibility for observation and adjustment of the motor is favored. In order to secure sufficient power the cylinder in a four-cylinder motor need not be so large that back-kicking of the starting crank will be a menace to any extent. The motor starts more easily, applies the power more continuously, admits of greater range of speed control, and weighs less per horse-power than the motor of fewer cylinders. Therefore, the four-cylinder engine is fast coming into more general use, and is the best form of explosive engine for use in a doctor's automobile.

Fig. 36.—Solid tires and coil springs, described by Dr. Hard, to secure resiliency without pneumatics.

The desire on the part of automobile designers to make the vehicle cling close to the ground has resulted in lack of road clearance between the wheels, which is a great source of worry and trouble for those who use country roads. Nine inches is the average clearance of an automobile of the low-wheel construction. A boulder the size of a man's head concealed in the grass that is usually found in the center of the country road, added to the rut depression on the sides, will strike the gear housing of the rear axle and destroy the car. This is the worst fault of automobile designers to be found in the standard automobiles of to-day.

My eleven years' experience in driving an automobile in country practice has led me to adopt somewhere near the following features: four-cylinder, four-cycle, water-cooled motor, with seats for only two, low protecting top, supplemental spiraf springs, solid rubber tires, plenty of good lamps (tank supply), side chain drive in order to get good road clearance in the middle, positive mechanical force-feed lubrication, storage and dry cells ignition, glass folding wind shield, speedometer and odometer, and a weight for the entire car of not over twelve hundred pounds.

A. D. Hard, M.D., Marshall, Minn.

A SYSTEMATIC PRESENTATION

During the past five years the marvelous development of the automobile has resulted in a much more satisfactory and serviceable car. Its use among the medical profession has increased to an enormous extent, chiefly for this reason.

A good serviceable car adapted for the use of a physician can be purchased to-day for almost one-half the price of five years ago.

Type of Car Desired.—Practically all the 1909 models of the reputable makes have four-cylinder engine with shaft drive and magneto ignition, and one can purchase cars of various sizes and horse-power according to the use he desires of it.

For the general practitioner who desires reliable service the runabout or small touring car is the most desirable, with from fourteen to thirty horse-power rating. The touring-car type with two seats is often of great value when you desire to carry more than two people, and the extra seat adds but little to the cost of the car. A four-cylinder shaft drive with long wheel base (at least 90 inches) gives smoother action and more comfort in riding.

Gasoline.—Only the best grade of gasoline should be used, as the cheaper grades carbonize the spark plugs more readily, and, by containing a larger percentage of water, often cause the motor to run irregularly.

Oils.—Lubrication is of the greatest importance and it will be soon learned by the beginner that a few cents saved on oil will result in a few dollars' wear on the machinery and bearings. Only good grades of oil should be used.

Ignition.—The most economical is the magneto, and almost all 1909 models possess this equipment. In cities storage batteries are satisfactory and comparatively inexpensive, but in the country districts where recharging causes considerable delay, the old method of using dry cells is essential, although decidedly more expensive.

Spark Plugs.—It is impossible to state that any particular make of plug is the best, as certain makes appear to give the best results in certain motors. This every one learns by experience, as every car is to a certain extent a law unto itself; but one fact remains: that the best spark plugs are those with the platinum tips, as they do not carbonize, hence do not require frequent cleaning as do those with steel contacts.

Tires.—The most expensive part of the maintenance is tires, and usually the most common cause of delay, as punctures will occur and usually at the most inopportune time. This is a problem of great value to the physician as a delay of this kind may mean a life lost. To obviate this I have tried all the various protectors and devices to prevent punctures, and during the past year I have not had a single puncture. My experience with solid and cushion tires has been unsatisfactory. They are hard on the machinery, jolting the car and breaking axles, which cost more than tires. The leather-cov-

ered protectors with steel discs to prevent skidding have proved the most satisfactory, and, if properly adjusted, the tire proper has but little wear, so that you obtain more than double the wear you would ordinarily expect, minus punctures which are annoying, undesirable and expensive. These protectors (139) I can recommend to every physician.

Care of the Car.—As in the case of all other machinery care exercised in keeping everything in A1 condition, the engine and friction parts clean, and allowing nothing to get loose, repairing every little thing as soon as discovered, will result in longer wear with better action and a greatly lessened expense account at the end of each year.

M. CLAYTON THRUSH, M.D., Philadelphia.

WITH AN AUTO EACH PATIENT RECEIVES AS MUCH TIME AS IS NEEDED

My practice takes me in the country, covering a radius of twenty miles, which, without swift transportation, makes necessary long hours on the road, short hours in the office, and as short a time as possible with each patient. With the automobile I am now using I am able to reverse the order: short hours on the road, much longer time in the office and as much time with each patient as I see fit to give. With such results it would not pay me to go back to horses. Besides the benefit in my business, one of the greatest blessings of the automobile is the relief from fatigue and drudgery of country practice. Instead of coming home with horses fagged and driver exhausted, one feels exhilarated and is ready to take one's family out for a spin.

My auto purchases covered both pneumatic-tired machines and solid tired, ranging from 44 inch to 30 inch wheels (117). I traded, sold or otherwise disposed of the various machines until I got my present car (118). This I am growing more attached to every day. It has solid 1½ inch rubber tires, 34-inch wheel, double chain drive, friction transmission, very long wheel base, and weighs about 1,300 pounds. It is easy to manage and costs little to maintain.

E. L. MCCREA, M.D., Table Rock, Neb.

THE AUTO ALL RIGHT—IF THE RIGHT KIND

After reading through an immense amount of automobile literature I reached the conclusion that my ideal car for rough country use should be constructed with high wheels, solid tires, air-cooled engine and a friction drive, so a year ago I bought an expensive runabout (190) embodying these features and started out with great expectations. Like many others I have found to my sorrow that it is not merely the principle of construction which determines the practical value of an automobile, but also and mainly the manner in which this principle is applied.

First, as to tires: The advantages of solid tires are more imaginary than real; they chip easily. One and a half inch tires especially wear out rapidly; 700 miles is their very longest life; two-inch tires of course last a little longer. But the assertion of the manufacturers that they are good for 11,000 miles is a fable. Riding, especially on hard roads, is very much less comfortable with solid tires. On sandy roads high wheels are impossible; on muddy hills they slip and the driver gets stalled if he will not take the trouble to wind ropes around the wheels or use chains. And finally a high-wheeler is very much more difficult to handle than a pneumatic-tired machine and can never be speeded up like the latter. Concerning the cost of up-keep, careful records show that the difference is not great. In most country towns there are no facilities for putting on the solid tires and one has to ship the wheels away, which adds to the expense and waste of time.

The air-cooled engine overheats easily; and this fault is attended by other trouble—loss of power, knocking, pre-ignition, etc. Even the most painstaking air-cooling is inadequate in our summers, no matter what the manufacturers claim. Besides, an air-cooled engine contributes largely to the constant and very irritating noise and vibration.

The friction-drive, with which several manufacturers equip their cars, is certainly better suited for any other form of machine than it is for a self-propelled vehicle, and while it offers great inducements to prospective buyers or manufacturers of machines, it is undesirable. The greatest fault is the loss of power from the twisting action due to the difference in inner and outer diameters of the driven friction-discs.

I believe that a machine of this type would be a fair success in a city where hard, good roads and limited speed prevail; but I earnestly advise prospective buyers who live in a sandy, hilly country not to experiment with high-wheelers.

It is important to buy from a well-established manufacturer with a reputation, both because the purchaser will get a better machine and because there is always a good market for a second-hand car with a reputation for reliability. Vehicles of little known origin bring but a fraction of the original cost when changing hands. Leave experiments to those who have time and money to spare.

I may add that I am now the satisfied owner of a low-wheeled car of a very well-known make (189).

D. TUFTE, M.D., Pelican Rapids, Minn.

THE COUNTRY DOCTOR'S CAR

After a thorough trial of the low wheel and pneumatic tire, with both sliding gear and planetary transmission, four months ago we began the use of the high wheel and solid tire with friction transmission (autos 176 and 178, illustrated on page 817). The change has been highly satisfactory, both from a physical and a financial standpoint.

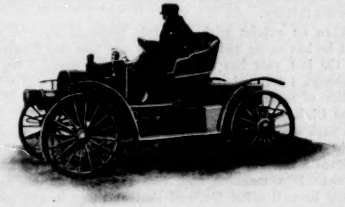


Fig. 37.—Dr. E. L. McCrea, Table Rock, Neb., finds solid tires satisfactory on his motor car (118).

Some of the numerous advantages of our present type of car are as follows: No delay on account of puncture; no gear trouble; ease of control; no repairs in four months' running (over 2,500 miles); no delay on country roads with high centers; good speed over rough roads; better time over sandy roads; less skidding in mud; much greater cleanliness, as less sand, mud and dust are thrown by narrow tire.

When repairs are under consideration the argument is all in favor of the solid tire and friction transmission, as the solid tire can be renewed for $7.50 and the friction transmission, complete, for $12, as against $40 for a pneumatic tire and $75 to $300 for geared transmissions.

The ease of control with the friction transmission is of great benefit; two foot pedals, one for the transmission and one for the brake, tell the story. A fraction of a second, without the hands being removed from the steering wheel or the eyes from the road, enables the driver to throw off the power and apply the brake.

With high clearance one can safely drive all traveled roads at good speed, a distinct advantage, especially at night. The high wheel will take uneven ground much easier than the low wheel, thus enabling better time on country trips. In sand the narrow tire gives less resistance, hence better speed with less strain. A recent run with our thousand-pound car demonstrated that we could pull a sandy up-hill stretch that had proved impossible for pneumatic cars of the same power (eighteen to twenty horse-power).

In our experience the weight should be evenly divided between the front and rear axles. Too much weight on the front axle causes hard pulling in soft ground, thus necessitating slow speed, which overheats the engines, while excessive weight on the rear axle causes undue wear of tires.

The item of greatest weight is perhaps that of fuel consumption. The high wheel, being of lighter weight, power for power, and its narrow tire offering less resistance, the gasoline consumption is only about one-half. The first cost is less and the up-keep nominal.

The high wheel is more generally useful. We are using our machine on rough country trips that have proved so costly to the pneumatic type that the owners refuse to make the attempt again in their cars.

The chief objection consists in the increased noise and awkward appearance of the high wheel as compared to the pneumatic.

E. M. FISHER, M.D., and H. A. INGALLS, M.D.,
Roswell, N. M.

HORSE SENSE

To write a communication of value on the auto question it seems to me two things are absolutely necessary. First, the writer should have had an experience of two or three years, so that the first mushroom growth of enthusiasm will have been knocked off. This wonderful enthusiasm of the novice with his first auto is like the exuberant granulation on an ulcered surface and requires the caustic of experience to bring it down to a proper level. Second, the writer should write for the good of the public and not for the sake of advertising an auto factory.

When an autoist with a certain make of machine tells me that he has never had any trouble and that his repair expense for the last year has been only forty-five cents, I try to look as though I believed him, but begin to sidestep and seek information of some fellow who doesn't wear the brand of the Ananias Club.

A man who has ridden in a carriage for ten to twenty years ought to have acquired some horse-sense, and if he has accumulated a fair amount of this valuable asset he will know that an auto is a machine and, like any piece of machinery, it should be well cared for, and that at times it will get out of order.

I believe I am correct in saying that every busy practitioner who has tried the auto in his work feels (when the machine is running well) that it is the ideal mode of locomotion. So far as the physician is concerned, then, the whole matter is one of (1) practicability and (2) expense of first investment, taking into consideration the life of the machine and the annual expense of up-keep.

Regarding the first point, the position of the auto to-day is very different from what it was five or even two years ago. Most of the mechanical parts have been tried out, improved and standardized. In this respect the advance in the auto business has been much like the advance in surgery. For example, the operations for appendicitis and for gallstones and the operation of no-loop gastrojejunostomy for certain conditions of the stomach have become standardized, we may say, but not until after many years of patient labor and experiment.

As to the second question of expense and up-keep, I can only cite some of my own experiences, which began three years ago with a second-hand machine—a touring car of a well known make (141). I had many pleasant trips in it and many trials and discouragements. Were it not that I am an optimist of the rankest type I should have become forever spoiled for autoing again—but I realized finally that I was struggling with a machine good for its type, but made in the experimental age.

In October, 1908, I purchased a four-cylinder, water-cooled 32 horse-power roadster vehicle (142), to my notion one of the most graceful and best proportioned machines on the market. I claim to know whereof I speak, for I was an interested observer at the Chicago Automobile show. One of the local papers called it the "niftiest" machine on the road—whatever that may mean.

I have used my car every day except one in my professional work. This was a day with the temperature from 10 to 14 below zero. The float stuck a little in the carburetor. This defect was adjusted and I have had no more trouble even on cold days. My practice occasionally calls me to adjoining towns thirty or forty miles away. With ordinary good roads I feel quite independent of the steam or trolley car. Thus far I have never had a breakdown or been obliged to stop to adjust the machinery.

Recently I was called on Sunday to a town forty miles away. It was impossible to reach it by train on Sunday and poor connections made it an all-day trip on week-days.

I started with the auto after dinner, spent an hour and a half at the consultation, and arrived home in the early evening. To make an eighty-mile trip like this in the summer or autumn in this length of time at a rate of speed such that the scenery means something to you; to have the cylinders "hitting" every time and every bit of machinery moving like clock-work, makes one feel that the auto is "a thing of beauty and a joy forever." I have power enough so that any ordinary hill is made on the direct.

As to expense of up-keep, I must say, even at the risk of being put down as a member of the Ananias Club, that thus far it practically has been *nil*. Such repairs as I have had were from slight accidents and no fault of the machine.

Fig. 38.—Dr. Harold M. Bruce, Cedar Falls, Iowa, in his car (127) with a folding rear seat for the wife and baby.

In the later days of a car's life we must, of course, expect a much greater expense for its up-keep, as various parts wear out and have to be replaced.

I have not kept an exact record of the ordinary running expenses, but can say that my car has run about 2,500 miles with an average monthly expense of from $22 to $25—but little more than the expense of keeping one horse at a boarding-stable.

To keep enough horses to do the work of the auto would incur an expense much greater than that of the auto. I am speaking now simply of running expenses, gasoline, oil, etc.

The time saved in making calls with the auto is unquestionably from one-half to two-thirds—so in the hands of the physician it very often proves to be a veritable life-saving device.

That a good, reliable machine be made at a more moderate price is a consummation devoutly to be wished, and, judging from the tendencies of the past, we have good reason to hope for much in this direction in the future. Yet I think it is a safe rule, for the guidance of either physicians or other prospective purchasers of automobiles, that worth in material and workmanship should not be sacrificed for price.

J. E. ALLABEN, M.D., Rockford, Ill.

DO NOT TINKER WITH YOUR CAR IGNORANTLY

The car for the practitioner must be capable of going over all kinds of rough roads in all sorts of weather, and, above all, be reliable. The ideal car is a gasoline runabout, with one, or at most, two, cylinders, and 12 or 16 horse-power. The more cylinders the more trouble and expense, the extra power obtained is usually only wasted, and speed above thirty miles an hour is not essential. The engine should be water-cooled, with a float feed carburetor, and ignition by jump spark with dry battery, direct drive, single chain, planetary gear in an oil-tight case, multiple disc clutch, with at least two forward speeds and a reverse. The brakes should be sufficiently powerful to hold the car on any hill, as well as to bring it to a quick stop when necessary. The steering mechanism should be a wheel with worm and segment and should be irreversible.

Pneumatic, double-tube tires, at least 3 inches in cross section, should be used, as narrower tires do not wear so well and are more apt to skid. A folding rear seat greatly increases the usefulness of the automobile.

In general, for hard work over poor roads, a comparatively heavy car, weighing between 1,200 and 1,500 pounds, will do better than one weighing about 800 pounds.

In winter a top with front and side curtains is essential, as well as chains (126) for the rear wheels (to avoid skidding) and an anti-freezing mixture in the water-tank. If the car is kept in a heated stable or garage it will start as well in winter as in the summer and be just as useful.

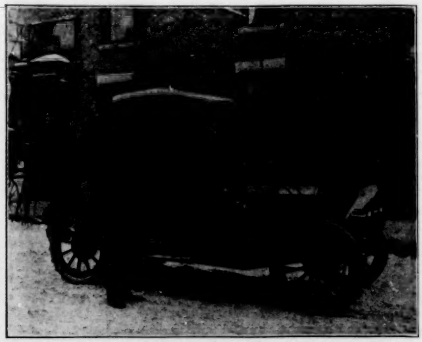


Fig. 39.—Dr. J. E. Allaben, Rockford, Ill., in his "nifty" machine (142).

Such a car will be found incomparably superior to the horse, will give twice the service in less time, and besides, will be a constant source of pleasure and satisfaction, both summer and winter. Automobiling is a most exhilarating exercise, and taking care of one's car furnishes a most healthful avocation for the doctor, and even enables one to dispense with many short vacations which the strain and stress of a large practice would otherwise make indispensable. But to get the best results one should remember that the gasoline engine is almost as delicate a piece of mechanism as the human body; and one should learn not to tinker with the adjustments unnecessarily or to try to improve on the work of the manufacturers. The diagnosis and treatment of automobile ills is a profession in itself and the physician should not ruin his machine and waste his time trying to make repairs which require an expert. He should, however, treat his car intelligently, keep it well cleaned and oiled, see that the gasoline and water-tanks are full and should not subject it to unnecessary jars and jolts.

By listening to the engine, the physician can very soon learn to tell whether anything is wrong, so that usually he can say just what the trouble is long before the engine stops and also whether he can fix it himself or whether skilled help is needed. Such warnings should never be neglected and thus breakdowns on the road may be avoided.

After a considerable experience with horses and poor automobiles (128), I have finally found a machine (127) which for my purposes is practically ideal.

Although an automobile costs more than a horse, the returns are many times greater, so that for the physician who really needs an automobile in his practice the extra expense is negligible. HAROLD M. BRUCE, M.D., Cedar Falls, Iowa.

SPEED AND THE CAR—WITH ESPECIAL REFERENCE TO THE COUNTRY DOCTOR

Classifying the profession in the most arbitrary manner as city or country doctors, we find the automobile problems confronting the two to be entirely dissimilar. The city physician, with patients thickly clustered within a small area, at all times within easy distance of repair shop or garage, driving mainly on good pavements, bound by stringent speed limits, is facing a proposition very different to that of his country confrère, whose call may come from five to fifteen miles away, over seldom traveled roads, unsafe bridges, or, failing these, flooded fords, with never a possibility of any aid but that which his own ingenuity and resource can supply. To the city man, the automobile (especially the electric with its fool-proof absence of mechanical trouble possibilities) has been a considerable blessing; but it can not do for him one tithe of that which it is capable of doing for the country practitioner with thinly scattered clientele.

The limit of a horse and buggy, day in and day out, may be set down as approximately twenty miles. Then come changes with loss of time for return to the stable. The automobile, properly constructed in the first place, properly cared for in the second, has a mileage capacity for the average working day of well over the hundred miles, carrying its supplies self-contained, untiring, easily competing with the ordinary train, and vying with the speed of the fastest limiteds should necessity demand it. For the public, motoring is but in childhood, for the profession it is still in infancy. Many of us have yet to cut our first teeth. As in years back (until we learnt better) the railroad car was patterned after the stage coach it replaced, so we have found it hard to break away from the lines of the buggy that in emergencies carried us perhaps as fast as twelve miles an hour.

Partly by reason of this innate conservatism—partly because of that strange lack of business sense which in so many cases seems incompatible with the acquisition of medical eminence, the doctors' automobile has been considered necessarily a monstrosity in a class by itself. Few of us could count the mushroom concerns that have arisen, led a briefly marasmic existence, and expired, with no apparent raison d'être except the selling (to a medical profession crassly ignorant of the rudest rudiments of motoring), of a rattletrap contraption terrible to contemplate, let alone possess, as one's only means of reaching a patient. The first types of these, hazily imaged as the result of a confusion of ideas in the mind of some bucolic genius whose visual perception of the farmer's buggy became inextricably implicated with that of the gasoline engine which did his chores; materialized further from this nebulous conception, in some cases by the happy conceit of incorporating as its simplest available system of transmission the strap that ran his mother's sewing machine; and finally built with an ingenuous but by no means ingenious disregard for all known principles of automobile construction. Made to sell for but little more than the price of the horse and buggy it competed with (often to the glory of the latter), designed to travel about as fast, and purchased with the optimistic expectation of not visiting the repair shop oftener than the horse it replaced had visited the smithy for footgear.

That they were justified is shown by the fact that some of these weird concepts have worked out amazingly well in their own limited sphere, meeting with quite a vogue among that section of our profession whose ideals have progressed but falteringly beyond the possibilities of a horse and buggy.

But, while they may have filled a want with some few just starting out on their careers to whom the outlay for a modern car would be prohibitive, and while later many of these have undoubtedly been led by these base instruments into lives of grace, it can not be denied that these hybrids have done harm in disgusting many of us with automobiles as a class, and they have certainly been the means of delaying the profession as a whole from coming rightfully into its own.

So much for the past. What of the future? First, let it be at once stated that the ideal car for the doctor has not arrived. It is in process of trying out, or rather its features are, in many different cars, but the perfected combination is still for the morrow. The pneumatic tire with its resiliency, wide tread, and comparatively long untroubled life (this will sound like heresy to some) if its size and strength are adjusted to the weight it bears, is unquestioned in supremacy. What solid-tired narrow-tread wheel can travel over country roads of even fair surface at thirty-five to fifty miles an hour? Crediting the buggy type where credit is due, however, the wheels of the ideal car should be large, over thirty-six inches rather than under. The low car prevailing hitherto was due to two factors, the high price of rubber and a mistaken idea of necessity for unduly low center of gravity. Tires have fallen markedly in price, and the large wheel is by so much the nearer.

As to air or water cooling, I prefer air, as my roads are execrable, and a water-cooled system is a museum of plumbing to carry, to leak, and to swear at. Makes of air-cooled cars are few and far between, and the best of them far behind the best water-cooled in other regards, content to rest too easily on claims of less weight and complication in the cooling system.

Number of cylinders? Four at least, six if you can afford it. I have a 1909 four-cylinder car (192) of 28 horse-power, replacing a 1906 six-cylinder 30 horse-power of the same make. The four-cylinder drops to fifteen miles per hour on the same hill that the older car sailed over the crest of at thirty-four. Further, for crowded street work the six would slow down to five miles an hour on the high gear; the four can not drop below fifteen without changing to intermediate.

Touring car or runabout? Touring car every time. In the first place the touring car will bring nearly twice as much second hand, the purchasers of worn-out cars appear to be more interested in how many they will carry rather than in anything else.

But the reason of reasons is this. In an emergency you can put an injured man into a tonneau and rush him to hospital; you can not well do it with a runabout. A tonneau makes the car look twice as heavy; in cold figures it adds about 5 per cent. to the weight.

Every doctor's car needs a removable and folding top. (Always remove the top in fine weather, tricing it up by the corners to the roof of the barn or garage ready to lower quickly; a top adds much strain to a car.) Also a glass front which will not leak, which they all seem to do. This should fold for fine weather use. A glass front is a wonderful insurance against reckless driving, though I know one chauffeur who has had things come at him through three of them.

A word as to chauffeurs. I have known them to run up modest monthly garage bills of $300 and over. On the other hand, the two best I am acquainted with feel personally aggrieved if this exceeds $10. Between are all gradations. But, with few exceptions, the doctor needs no chauffeur. A handy man with a liking for machinery is all that is requisite to look after the car, to clean it occasionally (too much water is a great mistake, removing necessary oil) and to drive it in emergency. The profession is making another discovery—that the doctor who does not drive his own car is neglecting a most valuable part of his whole curriculum and spurning the finest recreation ever offered to him. The mere fact of driving requires undivided concentration of attention. No man can drive and worry about his cases. He forgets them, or if he thinks of them at all it is in brief elucidating flashes of memory. The healthfulness of the chauffeur's occupation is one we are not yet sufficiently alive to. As hanging is no longer fashionable for thieving, I see no reason why a chauffeur should ever die, except those past masters of the art who have mistaken, in moments of clouded mentality, telegraph poles or fast freights for boulevards.

There are a few other factors to consider—weight, price and speed. About a ton seems to be the accepted weight for such a car as I have indicated. Prices are falling every year, but have quite a distance to drop, viewing their present inflation. However, even in this year of grace, there are several very fair four-cylinder cars for sale around $1,500.

The question of speed necessarily includes length of wheel base, and, of course, horse-power. A long wheel base means an easy riding car, but increases its turning radius somewhat. It should not be less than 100 inches. Horse-power is a delusive proposition juggled with by dextrous agents as the shell-game man does the nimble pea. It is better to reckon by the speed the car will attain. A car that can not travel fifty miles an hour on a good road will be a poor hill-climber in most cases. Speed means power, but power does not necessarily mean speed. When we talk of the speed of a car it is to be remembered that we do not mean the speed at which it does its average work; that inevitably varies with the user, but the maximum speed of which the car is capable if pushed to its utmost. Every physician has experienced times when no possible speed is adequate. For that reason the power of the ideal car will be governed by the limits of safety, mechanical ingenuity and the doctor's purse.

Here and there throughout the country doctors are coming to realize the possibilities of the modern automobile in the practice of medicine. Two years ago, a little over a mile from here, a man fell from a telephone pole, fracturing his skull. Medical attendance was almost immediately available, but it was four hours before the ambulance from the hospital, eight miles away, reached him (the roads are miserable), and he died on the way in. One evening last November another man fractured his skull, singularly enough within a few yards of the previous scene. Twenty-five minutes from the time the telephone message reached the doctor's office the man was in bed in the same hospital, having been brought in, nursed in the arms of two friends, in the tonneau of the doctor's car that responded. This man is alive, practically recovered.

Such an incident throws an interesting sidelight on this new phase on which our profession is entering. As conservative citizens we deplore the manifestations of speed mania now and again recorded in the daily press. But these races have done something. They have acted as a reliable indicator of the possible safe speed for an automobile. The accompanying mortality shows that the limit is honestly sought; frequently attained. A physician's training peculiarly fits him for exercise of quick decision and steady nerve, and there is no reason whatever why a large number of doctors should not become drivers of the highest skill.

Then comes the very important question of speed laws. The attitude of the public in regard to this aspect of the automobile question is rapidly shifting from unreasoning prejudice to thoughtful appreciation. The near relative of a patient in urgent need of professional attention, who beholds the needful aid coming at the speed of an express train, is liable to undergo an acute change of heart on the subject of speed regulations as they affect the doctor. Certain cities have more or less recognized the fact that the physician who can skilfully drive a car at a fast speed to save life may be allowed a license denied to the man driving simply for pleasure. If lives can be saved by speed with perfect safety to all concerned, the average man is not averse to seeing it done. Rather is he coming to demand it. The physician is generally an honored and responsible member of the community in which he lives. If not, it is his own fault, and these lines are not for him, and it is right here that I would utter a warning. The public confidence once won can easily be lost again for all time, and for this reason this privilege

can not, unfortunately, be placed in the hands of every member of the profession. There are in ours, as in all other walks of life, individuals unfitted to exercise any discretionary powers. Men who, finding the power at their disposal, would use it, not as it is meant to be used at the rarest of intervals for saving human life, but regularly, as a matter of course, to save dollars. For this reason the public must be rigidly warned and safeguarded. Warned by the profession itself against a too lavish bestowal of privilege; safeguarded by the powers that be with accurately devised and carefully worked-out regulations, which entrust this right to lay aside the law in great emergencies only to those who have shown themselves fit and proper persons to use it, suspending the privilege the moment it is abused, reinstating the erring member of the profession only when a sufficient time has elapsed and he has proved that the reprimand has made enough impression to prevent his transgressing again.

The doctor, looking rightly at his calling, realizes that he is the servant of humanity, its servant in greater degree than is the member of any other profession. The right to break speed laws is one that can only be granted by the people. As long as it is used solely for the people's interest there is no valid reason for withholding it. On the contrary, every reason why it should be granted. In every city the fire department has a right of way. Its speed is limited only by its capability for arriving safely with efficiency unimpaired. Rightly used similar privileges will, when the public is educated to the necessity and the possibility of its fulfillment, be thrust on the doctor. The same conditions apply; the imperative need of arriving quickly, but with the proviso that speed may not be purchased by any sacrifice of safety or damage to life and property. That physician who, in the course of a hurry call, runs over several chickens, some dogs and more people, arriving with the wreckage of the vehicles that did not get out of the way decorating his searchlights, is hardly the man that the people care to have handle the emergency case when (if ever) he gets to it. The necessity for this discrimination may not, however, arise, as there is the possibility that he is altogether likely to bring his John Gilpin's ride to a successful (?) termination by running over not only the patient, but at least a few of his solicitous friends before he can check his career.

JULIUS HAROLD HURST, M.D., Montecito Cal.

A GOOD HILL-CLIMBER

In 1906 I became so sorry for my horses that I bought a single-cylinder runabout (194). I ran it night and day, in all kinds of weather and all kinds of roads for two years. It is a fine car, for in this time I traveled eighteen or twenty thousand miles; but there were several serious objections to it, as there were to some other cars of similar make. These faults or weak points were, briefly, unreliability as to puncturing tires at wrong time in emergencies, low wheels, weak and dangerous points in single chain on differential in center of rear axle, insufficient and unreliable brakes, and unreliable transmission, as it would so frequently get out of order. The chain would break frequently or come off; then the water-cooling apparatus frequently got out of order; the pump would break or the radiator or pipes would break.

I decided that the car for my use should be air-cooled and have wheels at least forty inches high, solid rubber tires, fifteen or more horse-power, a friction drive and double-chain transmission. I determined to have one made according to my idea; then I saw in 1908 Automobile Number of THE JOURNAL a description of what struck me as an ideal car (193) for the practical physician; the more so, as it had a twin or double friction drive, thus eliminating any differential gear. I went up to Rochester, Minn., the last of April, 1908, to have dug out a bum appendix I had been toting around for some time, and on my way back home stopped in Chicago and spent a couple of days investigating the machine which had attracted my attention. I put it through sufficiently severe tests and bought a runabout at once, adding to it, however, some special features, namely, a rumble seat (so I can carry five passengers easily) and a canopy top and glass front, making my machine appear, as one of my friends remarked, like a cross between a milk-wagon and a hearse, but I told him that I took them from the cradle to the grave, and everybody was satisfied.

I have been running the car night and day since August, 1908—2,500 miles. The tires have never given me any trouble and I think that they will last for three or four thousand miles more. It is a good hill-climber and has been most satisfactory and reliable. I leave it in front of my office nearly all the time, night and day, and only send it to the garage for supplies. It is a little noisy, but I think this disadvantage has been lessened since I bought my car.

C. HOLTZCLAW, M.D., Chattanooga.

A PLEA FOR LOW-POWERED CARS

If one can not purchase a high-priced and high-powered car, excellent and satisfactory service can be obtained from one of a lower price and lower power. There are several single-cylinder and two-cylinder cars of much merit, both in service and up-keep, some of which sell for little more than $500. The up-keep of low-powered cars is decidedly less than that of the multi-cylinder; gasoline, oil, tires, ignition and repairs are much in proportion to weight and power of the machine. While the speed of the low-powered cars is less than that of the higher powered, it is sufficient for the physician's use—all that the roads allow or the law permits. The owner of the lean purse can get nearly as much satisfaction out of his single-cylinder or two-cylinder car as his neighbor from his four or six cylinders, and if under the necessity of doing so can take care of the car himself.

The up-keep of a motor car is somewhat a matter of individuality and environment; careful driving and daily inspection go toward the reduction of expense. The physician, whenever practicable, should keep his car near his office.

I have driven a single-cylinder (5 x 5) chain-drive machine (144) daily, summer and winter, during the past three and one-half years, at a total expense of $250 yearly. The machine shows but little wear and will be as useful for the next three years. Yearly will be required one set of tires, one extra shoe and two or three tubes, dry cells, four to six sets, one chain if a "chain-drive" machine; gasoline will equal about fifteen miles to the gallon; oil ten to twenty gallons; the repair bill for tires, breakages and accidents may be a trivial or large amount, depending largely on the care and intelligence bestowed on the machine. The tire expense can be lessened by careful driving, especially around sharp curves and corners, by avoidance of skidding, of overloading the car, of driving over sharp objects, nails and glass, and by keeping out of ruts. No grease or gasoline should be allowed on the shoes; nothing damages rubber faster than oil. Tires should be kept well inflated, thus giving longer wear, less internal friction and liability to puncture. When a tube is punctured it should be immediately removed and a sound one inserted. The early repair of "blow-outs" will save much tire expense. As soon as one is noticed the shoe should be removed and heavy canvas applied inside the shoe, reaching from one edge to the other, fastening it with rubber cement; or an inner "tube-protector," which is composed of rubber and fabric, may be applied. With such repairs I have had a shoe run a thousand miles without any further trouble. External cuts should be vulcanized. Chains applied to the driving wheels prevent skidding to a large degree when the speed is not too fast, and with no injury to the tires.

On low-powered cars dry cells are sufficient for the electrical energy. Fresh cells should always be bought, handled carefully, and the cells connected in such a manner that no two will be in contact, short-circuiting, and that no water can gain access to the box. Each cell should be tested with the ammeter before being connected; also when the amperage drops below six or eight, the cells should be removed, otherwise the engine will begin to "miss fire," which will puzzle the novice to locate the trouble. With good batteries, clean electrical connections, gasoline and oil in plenty, few troubles

will arise. The carburetor or timer should not be tampered with when properly set, and the manufacturers usually set them correctly; they seldom need changing.

In the winter the best anti-freezing solution to use in the water-system is a 25 to 40 per cent. solution of denatured alcohol; the 40 per cent. solution will withstand a temperature of minus 5 degrees without freezing. I have found this solution more satisfactory than calcium chlorid.

What car shall the man with limited means buy? So much depends on himself, his mechanical abilities, his environment, his social and family requirements, that each one must solve this question himself. A good single-cylinder car is better than a poorly constructed four-cylinder. For the inexperienced I believe the best initial investment would be a single-cylinder or two-cylinder car. These cars can go anywhere and do all the work one requires of them—and will stand a great deal of abuse. Standard models should be chosen, which have been well tried and have an established reputation.

N. B. BAYLEY, M.D., Haverstraw, N. Y.

RESERVING THE AUTOMOBILE FOR GOOD WEATHER AND GOOD ROADS

Many automobiles are manufactured and advertised as just the right car for the physician, with the one object mostly in view of selling the car regardless almost of its worth compared with other machines. In order to decide which car to buy, one needs to inquire of each owner about his experience. Yet this plan will fail sometimes, for a car giving success in the hands of one man may prove a great expense and disappointment to another.

The car I have used for two years except this winter (illustrated on page 826) went through most all kinds of weather and roads last winter. This winter I had recovered from my ambition to use an automobile regardless of weather conditions, and in preference to using a horse and buggy or automobile I have gotten along very well using street cars. This is a way of transportation which means the least amount of trouble after calls are made. The care of a horse and buggy or an automobile is no small item. I have owned seven different horses in the past fifteen years and one automobile and feel that I am safe in making this statement regarding both.

The automobile I have (179) has one cylinder eight to ten horse-power two cycle, water-cooled engine. I have used this machine very successfully and shall begin its use again about April 1. It is about as good as ever with exceptions of paintings and top, both of which show effects of age, rain and sun.

I have solid tires (196) on rear wheels. There is so little weight on the front wheels that I very seldom have trouble. A few days ago I looked my car over and found that all there was wrong was that one of the pneumatic tires in front was down, so if I wanted to ride to-day I could not on account of the pneumatic tire, as usually is the case nine times out of ten with most automobile troubles. Unless you have money to spend freely I think it is best to do away with pneumatic tires, or if your car will not work as well with solid tires, sell it to some one who does not care so much for expenses and buy a car which will do the work with solid tires as well. Or if you want to buy a car, look around and see where you can find one with solid tires before you buy.

My experience has been that I have had no trouble with any part of my car with solid tires that I did not have when I had pneumatics. In addition I am now saved the great trouble I had with pneumatics.

J. E. ASAY, Rock Island, Ill.

A PHYSICIAN'S MOTORCYCLE

I purchased my motor cycle (147) in June, 1907. I have driven it over 4,500 miles at a cost of $57.18. Had I taken care of my machine personally the expense would have been reduced by about $15. This makes the expense for running the motorcycle approximately 1¼ cents per mile. I have had but little trouble, and this mostly during my first two months of apprenticeship. Only once, because of a broken roller, have I failed to come in on my own power.

To a man who has been a bicycle-rider the use of the motorcycle is a pleasure indeed. By merely a twist of the wrist he can get all the speed and power he desires. As to drive, I have only tried the chain, and found it very satisfactory; I am still using the same two chains I got with my machine. I find a pleasant speed carries me about twenty miles an hour, which is at least twice the speed a team can keep up on long drives. My machine is never tired, and after a long trip, with a pumpful of oil, it is ready for another journey.

The use of the motorcycle during the hot months of summer is especially satisfactory. When the team suffers from the heat and can be driven only at a moderate speed, then the motorcycle will take a tireless gait that will create a breeze and make riding a pleasure. A motorcycle can be used over roads where an automobile would not prove satisfactory, from the fact that the former has two wheels while the latter has four. A mere path by the roadside is sufficient for the motorcycle. By the use of the motorcycle one can complete his country rides in about one-third the time necessary for the same distance by team. Thus he has more time for study, recreation and office work. I am fully satisfied with the use of the motorcycle (illustrated on page 817) in my practice.

JAMES E. TAYLOR, M.D., Ovid, Mich.

FROM THE USER OF AN AIR-COOLED CAR

Twenty or more years ago, before the telephone became of such practical importance, the average doctor could get along without it. To-day the physician simply could not meet competition if he tried to practice without a telephone in his office, and the time is coming when the same may be said of the automobile as compared with the horse for practice in the city. The present condition of the roads in the country encourages considerable difference of opinion. In the city there is no argument. The automobile has won. My personal experience extends over a period of three years. I originally used a two-cylinder runabout (182) and am now using a four-cylinder, air-cooled car (181). My present machine, illustrated on page 827, is far superior to the other.

GEORGE EDWIN BAXTER, M.D., Chicago.

I have owned and used a ten (183) and a fourteen horse-power machine (198), the latter of which cost $825. Either of these would have been satisfactory for good level roads, but both were too light for the steep hills and rough roads in and around Cincinnati. I am running a twenty-four horse-power, four-cylinder $1,250 machine (180, illustrated on page 826). The expense of an automobile carefully run is about equal to that of two horses, but it will do the work of three or four, besides saving much time and thus lightening the doctor's day's work. E. W. MITCHELL, M.D., Cincinnati.

I have driven an electric auto over 2,800 miles in my practice in this city with the greatest satisfaction. It has never given the slightest trouble. I have never made an adjustment, tightened a bolt or screw. My machine (163, illustrated on page 813) is always ready to go at a moment's notice. Expenses for repairs have been nothing. The electric auto with a mercury arch transformer for charging is in my opinion the best equipment for a physician with a city practice.

W. P. ARMSTRONG, M.D., Springfield, Ill.

I have covered 4,500 without mishap since May. My machine (164, illustrated on page 827) is ideal in a city with good streets. The machine is too light for extensive use on bad country roads, but its very lightness guarantees the minimum expense for tire, oil and gasoline. In exact tests I have ascertained that I get about nineteen miles out of one gallon of gasoline while using my machine in my daily work, which means slowing down at every street corner, and a stop practically within every mile. My total expenses for tires have been $16.50, retreading of two tires $14, patching of one, $2.50. HUGO EHRENFEST, M.D., St. Louis.